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It is a pleasure to commend the far-sighted policy of the Office of Naval Research, with its emphasis on basic research, as a result of which a grant has made possible the continuation of the Coral Atoll Program of the Pacific Science Board.

It is of interest to note, historically, that much of the fundamental information on atolls of the Pacific was gathered by the U. S. Navy's South Pacific Exploring Expedition, over one hundred years ago, under the command of Captain Charles Wilkes. The continuing nature of such scientific interest by the Navy is shown by the support for the Pacific Science Board's research programs, CIMA, SIM, and ICCP, during the past six years. The Coral Atoll Program is a part of SIM.

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Enumeration of the Decapod and Stomatopod Crustacea from Pacific Coral Islands

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PACIFIC SCIENCE BOARD OF THE NATIONAL RESEARCH COUNCIL

Invertebrate Consultants Committee for the Pacific

Enumeration of the Decapod and Stomatopod Crustacea from Pacific Coral Islands

L. B. Holthuis

Rijksmuseum van Natuurlijke Historie

Leiden, The Netherlands

June 5, 1953

Enumeration of the Decapod and Stomatopod Crustacea from Pacific Coral Islands

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Leiden, The Netherlands

INTRODUCTION

The present enumeration lists the Decapod and Stomatopod Crustacea collected during the first three years of the Pacific Science Board's Coral Atoll Program. The collections include those made at Arno Atoll, Marshall Islands, in 1950; at Onotoa Atoll, Gilbert Islands, in 1951; in the Marshall Islands in 1951-1952; and at Raroia Atoll, Tuamotu Islands, in 1952. Also included are the Decapoda and Stomatopoda collected by Dr. Preston E. Cloud, Jr. and his associates in 1949 at Saipan during ecological investigations of the Saipan reefs under a project sponsored by the U. S. Geological Survey.

The work of the author on this enumeration was made possible by a contract between the Office of Naval Research, Department of the Navy, and the National Academy of Sciences (NR160 175).

The list of species given here is not annotated and is intended only to furnish the ecologists, who collected the material, with the names of their specimens. Since the number of scientists involved is rather large, it was not feasible to provide each with a typed copy. Therefore, it was decided to present this list in the present mimeographed form. A duly annotated report on the Decapoda Macrura will be published in the near future.

The present enumeration is not complete insofar as the crabs of the family Trapeziidae are excluded. The material of this group has been turned over to Dr. Fenner A. Chace, Jr., curator of the Division of Marine Invertebrates of the U. S. National Museum, who is preparing a revision of this family. Through lack of time, only one species each of the families Galatheidae and Porcellanidae have been dealt with here.

Full station data generally are given with each record. The location of the 1949 P. E. Cloud Saipan stations may be seen on map No. 1. The data associated with R. W. Hiatt's material collected during the 1950 Arno Atoll Expedition are given as a supplement at the end of this paper, at least for the non-Macruran Decapods. Dr. Hiatt's station data for the Macrura are given under each species. Albert H. Banner's 1951 Onotoa localities are to be found on map No. 2. Several of these localities are discussed by Dr. Banner in Atoll Research Bulletin No. 13, Pt. I (1952).

DECAPODA

I. Brachyura

DROMIACEA

Family Dromiidae

Cryptodromia canaliculata Stimpson

a. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A. I-II: 1 spec.
b. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks, etc., near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.
c. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks near shore in pavement pool zone; July 21, 1952; J. P. E. Morrison; Loc. 1963: 1 spec.

Family Dynomenidae

Dynomene spinosa Rathbun

a. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks near shore in pavement pool zone; July 21, 1952; J. P. E. Morrison; Loc. 1963: 1 spec.

OXYSTOMATA

Family Calappidae

Calappa hepatica (L.)

a. Ine Village, Arno Atoll, Marshall Islands; sand near shore of lagoon; July 25, 1950; J. W. Wells; Loc. 60: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 2-164: 3 spec.
c. Onotoa, Gilbert Islands; July - August, 1951; A. H. Banner: 1 spec.
d. Onotoa, Gilbert Islands; July - August, 1951; A. H. Banner; Loc. B: 1 juv.
e. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. B 1-6: 3 spec.
f. Onotoa, Gilbert Islands; clean limesand flat in the vicinity of a point about 3000 ft. E. of Aonteuma, NW. Onotoa, area exposed at mid-tide; August 21, 1951; P. E. Cloud; Loc. GOC-42: 1 spec.
g. Leeward reef, Ailuk Atoll, Marshall Islands, just west of Ailuk Island; leeward side; 1951-1952; F. S. MacNeil; Loc. 846: 1 spec.
h. West end of Ailuk Island, Ailuk Atoll, Marshall Islands; leeward reef; 1951-1952; F. S. MacNeil; Loc. 853: 2 spec.
i. Lae Island, Lae Atoll, Marshall Islands; windward side, under rocks; 1951-1952; F. S. MacNeil; Loc. 877: 1 juv.
j. Island north of Lae Island, Lae Atoll, Marshall Islands; lagoon side; 1951-1952; F. S. MacNeil; Loc. 879: 1 spec.

Matuta banksi Leach
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 2-144: 1 spec.

Family Leucosiidae

Nucia speciosa Dana
a. Lagoon west of Saipan, Marianas Islands; May 4, 1949; P. E. Cloud; Loc. E-8; from coral rock: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4; 500 yds. NNE of Managaha Island: 1 spec.

OXYRHYNCHA

Family Majidae
Subfamily Acanthonychinae

Menaethius monoceros (Latreille)
a. Lagoon west of Saipan, Marianas Islands; April 8, 1949; P. E. Cloud; Loc. B-2; taken from vegetation and sand brought up by diving with face plate: 6 spec.
b. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; April 6, 1949; P. E. Cloud; Loc. D-5: 4 spec.
d. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4; 500 yds. NNE of Managaha Island: 3 spec.
e. Onotoa, Gilbert Islands; SE end of reef area known as Rakai Ati, S. side of big windward point of reef near center of atoll. Collected in $\frac{1}{2}$ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.
f. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer part of old wharf along lagoon beach at village; August 29, 1952; J. P. E. Morrison; Loc. 2224: 1 spec.

Trigonothir obtusirostris Miers
a. Lagoon west of Saipan, Marianas Islands; April 19, 1949; P. E. Cloud; Loc. F-X: 1 spec.

Xenocarcinus depressus Miers
a. Onotoa, Gilbert Islands; about 9200 ft. S. 72° W. from offshore end of Government Station jetty (on S. portion of northern main island) just S. of main passage out of lagoon (Rawa ni Karoro) where coral shoals, known as Aon te ra Bata, begin to deepen. From area where patch reefs rise above the limesand bottom at 16 ft. depth; July 29, 1951; P. E. Cloud; Loc. GOC-27: 1 spec.

Subfamily Pisinae

Tylocarcinus styx (Herbst)
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C.-7A: 2 spec.
b. Lagoon west of Saipan, Marianas Islands; April 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.

Subfamily Hyasteninae

Micippoides angustifrons A. Milne Edwards
a. N. of Kahongi Island, Raroia Atoll, Tuamotu Islands; from outer end of channel, and from outer beach pavement flats of outer reef in same area; July 25, 1952; J. P. E. Morrison; Loc. 1994: 1 spec.

Perinea tumida Dana
a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 3 spec.
b. Ine Anchorage, Arno Atoll, Marshall Islands; from coral rock on reef flat; August and July, 1950; J. H. Wells; Loc. 6: 1 spec.
c. Onotoa, Gilbert Islands; August 20, 1951; P. E. Cloud: 1 spec.
d. Onotoa, Gilbert Islands; from Pocillopora coral, ocean shelf, 25 feet deep; August 10, 1951; A. H. Banner; Loc A-X: 1 spec.
e. Onotoa, Gilbert Islands; from Pocillopora; August 6, 1951; A. H. Banner; Loc. A-14: 3 spec.
f. Onotoa, Gilbert Islands; on sponges; August 6, 1951; A. H. Banner; Loc. A-17: 2 spec.

Subfamily Majinae

Cyclax suborbicularis (Stimpson)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 1-702: 1 ovig. female.

Subfamily Mithracinae

Micippa parca Alcock
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.

Micippa platipes Rüppell
a. Donkolo Agingan, Saipan, Marianas Islands; in pool at edge of low tide; May 4, 1949; collector, Mrs. David; P. E. Cloud: 1 spec.
b. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-7: 1 spec.
c. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 1 spec.
d. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A. I-II: 4 spec.

Family Parthenopidae
Subfamily Parthenopinae

Daldorfia horrida (L.)
a. Lagoon west of Saipan, Marianas; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-171: 1 spec.

Subfamily Eumedoninae

Eumedonus convictor Bouvier & Seurat
a. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; commensal on anal plate region of Banded Spined Poison Sea Urchins (Echinothrix diadema (L.)), one on each Urchin of good size; from pockets (sandy bottom, etc.) in inner reef only, near lagoon edge of reef in transect area at night; September 2, 1952; J. P. E. Morrison; Loc. 2246: 2 spec.

Harrovia purpurea Gordon
a. Kwadak, Kwajalein Atoll, Marshall Islands; on Comanthus bennetti (J. Muller), 3-4 fms. deep; July 1, 1951; P. E. Cloud: 4 spec.

BRACHYRHYNCHA

Family Portunidae
Subfamily Caphyrinae

Caphyra rotundifrons (A. Milne Edwards)
a. Lagoon north of Matuis Beach, NW. Saipan, Marianas Islands; picked from head of brown Acropora; December 12, 1948; P. E. Cloud: 1 spec.

Lissocarcinus orbicularis Dana
a. Matuis Beach, NW. Saipan, Marianas Islands; commensal in black holothurian, 5 crabs in 100 host specimens, four of them found within host at oral end, fifth had crawled out; color alive, black with white spots; December 19, 1948; P. E. Cloud: 5 spec.

Subfamily Portuninae

Charybdis erythrodactyla (Lamarck)
a. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef, fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1972, 1973: 4 spec.
b. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef, fishing at night; mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 22, 1952; J. P. E. Morrison; Loc. 1979-1983: 3 spec.
c. Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef, zone just behind the Lithothamnion ridge or in it, at night; August 4, 1952; J. P. E. Morrison; Loc. 2042: 1 spec.

Portunus (Cycloachelous) granulatus (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 1-16: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 1-435: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 2-21: 1 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 2-457: 1 spec.

e. Onotoa, Gilbert Islands; clean limesand flat in the vicinity of a point about 3000 ft. E. of Aonteuma, NW. Onotoa; area exposed at mid-tide; August 21, 1951; P. E. Cloud; Loc. GOC-42: 1 spec.
f. South end of Oneroa Island, Raroia Atoll, Tuamotu Islands; white swimming crab hiding in the fine white sand; August 7, 1952; J. P. E. Morrison; Loc. 2078: 1 spec.

Portunus (Hellenus) longispinosus (Dana)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 2-505: 2 juv.
b. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec. (q.)
c. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A. I-II: 3 spec.
d. Opakea Island, Raroia Atoll, Tuamotu Islands; small and fragile sand crabs from sandy bottom of shallow tide pool remaining at low tide, at night; at SE. point of island; August 26, 1952; J. P. E. Morrison; Loc. 2196: 2 spec. (1 ovig. female).

Thalamita admete (Herbst)
a. Saipan, Marianas Islands; from a single large head of Acropora leptocyathus; April 7, 1949; P. E. Cloud: 1 spec.
b. Matuis Beach, NW. Saipan, Marianas Islands; taken mostly from clump of brown Acropora and partly from Pocillopora damicornis cespitosa; December 17, 1948; P. E. Cloud: 5 spec.
c. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud: Loc. A-5: 2 spec.
d. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 2 spec.
e. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 26 spec.
f. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 7 spec. (q.)
g. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-7: 1 spec.
h. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-Z (=2?): 6 spec.
i. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A. I-II: 41 spec.
j. Onotoa, Gilbert Islands; NW. Onotoa about 1300 ft. NE. from Namokoro, in an area of gravelly sand bottom with maximum depths of about 12-14 ins. at low tide and with occasional heads of digitate Porites lobata; August 21, 1951; P. E. Cloud; Loc. GOC-39: 2 spec.

Thalamita coeruleipes Jacquinot
a. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 3 spec.
b. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 spec.

Thalamita danae Stimpson
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-306: 1 ovig. female.

Thalamita ? edwardsi Borradaile
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-47: 3 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-308: 1 ovig. female.

Thalamita ? intermedia Miers
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-503: 1 spec.

Thalamita picta Stimpson
a. Lagoon west of Saipan, Marianas Islands; April 7, 1949; P. E. Cloud; Loc. A.-11; from coral heads in 4 to 6 ft. water: 1 spec.
b. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 12 spec.
c. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec. (q.)
d. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A 8-9: 1 spec.
e. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A 10-12: 1 spec.
f. Onotoa, Gilbert Islands; July 20, 1951; A. H. Banner; Loc. A 11: 3 spec.
g. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A. I-II: 7 spec.
h. Onotoa, Gilbert Islands; SE. end of reef area known as Rakai Ati, S. side of big windward point of reef near center of the atoll; collected from $\frac{1}{2}$ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.
i. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; sandy pavement flats near shore; July 23, 1952; J. P. E. Morrison; Loc. 1977: 1 spec.

Thalamita pilumnoides Borradaile
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 2 spec.
b. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 5 spec.
c. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 6 spec.
d. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.

Thalamita prymna (Herbst)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-5: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-151: 4 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-307: 1 spec.

Thalamita quadrilobata Miers

a. Onotoa, Gilbert Islands; toward S. end of a lee reef stretch known as Rakai Ati, in an area of small coral patches fairly thickly interspersed on limesand and coral debris. The bottom is at depths of 3-4 ft. at low tide; July 26, 1951; P. E. Cloud; Loc. GOC-24: 1 spec.

Thalamita wood-masoni Alcock

a. Lagoon west of Saipan, Marianas Islands; April 8, 1949; P. E. Cloud; Loc. B-2; taken from vegetation and sand brought up by diving with face plate: 2 spec.

Thalamita spec.

a. Saipan, Marianas Islands; 1949; P. E. Cloud; Loc. D.-8: 1 juv.
b. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 8, 1952; J. P. E. Morrison; Loc. 1885: 1 spec.

Thalamitoides quadridens (A. Milne Edwards)

a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 9 spec.
b. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7A: 3 spec.
c. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 5 spec.
d. Lagoon west of Saipan, Marianas Islands; May 5, 1949; P. E. Cloud; Loc. E-7; from coral rock: 2 spec.
e. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 2 spec.
f. Onotoa, Gilbert Islands; about 9200 ft. S. 72° W. from offshore end of Government Station jetty (on S. portion of northern main island) just S. of main passage out of lagoon (Rawa ni Karoro) where coral shoals known as Aon te ra Bata begin to deepen. From area where patch reefs rise above the limesand bottom at 16 ft. depth; July 29, 1951; P. E. Cloud; Loc. GOC-27: 1 spec.
g. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon. Patch reefs rising above limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 spec.
h. Onotoa, Gilbert Islands; about 9300 ft. N. 30° W. from Tabuarorae Maneaba in S. part of Te Rawa Tekatobibi, a pass through the S. end of the leeward reef. Collected from patch reefs rising to an occasional maximum of within 4 ft. of the surface from a bottom sounded at 18 ft.; August 23, 1951; P. E. Cloud; Loc. GOC-53: 1 spec.
i. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon. The bottom is of low scattered dead and living coral patches on intervening limemud and limesand about 30-40% seds. and 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 1 spec.

Subfamily Catoptrinae

Carupa laeviuscula Heller

a. Homohomo Island, Raroia Atoll, Tuamotu Islands; under rocks near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.

Catoptrus nitidus A. Milne Edwards

a. Onotoa, Gilbert Islands; tidepool in Heliopora flat, 2 ft. deep; August 1, 1951; A. H. Banner: 1 spec.

Libystes spec.

a. Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-8, taken from dead coral and algal rock at a depth of about 10 ft.: 1 spec.

Family Atelecyclidae
Subfamily Thiinae

Kraussia rugulosa (Krauss)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E. 1-44: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 7, 1949; P. E. Cloud; Loc. A-11, from coral head in 4-6 ft. of water: 1 spec.
c. Onotoa, Gilbert Islands; Heliopora flat, tidepool, 2 ft. deep; August 1, 1951; A. H. Banner: 1 spec.

Family Xanthidae

Actaea cavipes (Dana)

a. Saipan, Marianas Islands; January 30, 1949; P. E. Cloud: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 3 spec.
c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
d. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 4 spec.
e. Onotoa, Gilbert Islands; S. part of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the PSB campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 spec.
f. Butaritari Atoll, Gilbert Islands; about $\frac{1}{5}$ mile E. offshore from the central part of Bikati Island, in pocket of broad area of Heliopora reef, NW. Butaritari; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.
g. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from coralline algae from outer reef margin, N. end of island; September 3, 1952; J. P. E. Morrison; Loc. 2252: 1 spec.

Actaea hirsutissima (Rüppell)

a. Saipan, Marianas Islands; P. E. Cloud; Loc. C-IX: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; May 3, 1949; P. E. Cloud; Loc. E-4: 2 spec.

Actaea lata Borradaile

a. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 1 ovig. female.
b. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 2 spec.

c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.
e. Nado Island, Likiep Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 827: 1 spec.

Actaea polyacantha (Heller)
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 3 spec.
c. Onotoa, Gilbert Islands; back ridge trough, about 600 ft. offshore from Pacific Science Board camp at the outer margin of the windward reef, just inshore from the algal ridge and surge channels. This part of the reef never dries even at low tide and generally has at least a foot or two of water above it; August 1, 1951; P. E. Cloud; Loc. GOC-32: 1 spec.
d. Onotoa, Gilbert Islands; SE. end of reef area known as Rakai Ati, S. side of big windward point of reef near center of atoll. Collected from ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.
e. South Loi Island, Kwajalein Atoll, Marshall Islands; windward reef flat; 1951-1952; F. S. MacNeil; Loc. 894: 1 spec.

Actaea rufopunctata (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E- 1-386: 1 spec.
b. Onotoa, Gilbert Islands; about 3¼ miles N. 31° W. from Tabuarorae Naneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef. From thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec. (with Rhizocephalan).
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef; July 7, 1952; J. P. E. Morrison; Loc. 1877: 1 spec.

Actaea speciosa (Dana)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-390: 4 spec.

Actaea spec. aff. speciosa (Dana)
a. Onotoa, Gilbert Islands; about 3¼ miles N. 31° W from Tabuarorae Naneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef. From thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 2 spec.

Actaea superciliaris Odhner
a. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.

c. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks, etc., near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 3 spec.

Actaea tomentosa (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-175: 1 spec.

Atergatis ? dilatatus De Haan
a. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 spec.

Atergatis floridus (L.)
a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 4 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-386: 1 juv.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-3: 3 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-170: 3 spec.
e. Bikati Island, Butaritari Atoll, Gilbert Islands; about ½ mile E. offshore from the central part of Bikati Island in pocket of broad area of Heliopora reef, NW. Butaritari; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.

Atergatopsis signatus (Adams & White)
a. South end Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef, fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 1 spec.

Carpilius convexus (Forskål)
a. South end Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef, fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 4 spec.

Carpilius maculatus (L.)
a. Onotoa, Gilbert Islands; tidepool in Heliopora flat, 2 feet deep; August 1, 1951; A. H. Banner: 1 juv.
b. South end Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef, fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 5 spec.

Carpilodes bellus (Dana)
a. Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-8; taken from dead coral and algal rock, ca. 10 ft. deep: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 4 spec.
c. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 11 spec.

e. Onotoa, Gilbert Islands; tidepool in Heliopora flat, 2 ft. deep; August 1, 1951; A. H. Banner: 1 spec.
f. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 5 spec.
g. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon. Patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 spec.
h. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon. The bottom is of low scattered dead and living coral patches on intervening limemud and limesand about 30-40% seds. and 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 4 spec.

Carpilodes edwardsi (Kossmann)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-651: 1 spec.

Carpilodes monticulosus A. Milne Edwards
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 1 spec.
b. Onotoa, Gilbert Islands; August 24, 1951; A. H. Banner; Loc. A-XVI: 1 spec.
c. Onotoa, Gilbert Islands; about 3¼ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawi ni Bao, a pass in the S. part of the leeward reef. Collected from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec.
d. Onotoa, Gilbert Islands; about 9300 ft. N. 30° W. from Tabuarorae Maneaba in S. part of Te Rawa Tekatobibi, a pass through the S. end of the leeward reef. Collected from patch reefs rising to an occasional maximum of within 4 feet of the surface from a bottom sounded at 18 ft.; August 23, 1951; P. E. Cloud; Loc. GOC-53: 2 spec.

Carpilodes rugatus (H. Milne Edwards)
a. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from coralline algae from outer reef margin; September 3, 1952; J. P. E. Morrison; Loc. 2252: 1 ovig. female.

Carpilodes semigranosus (De Man)
a. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.

Carpilodes tristis Dana
a. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-622: 1 spec.
d. Onotoa, Gilbert Islands; in coral ?; August 9, 1951; A. H. Banner; Loc. B-5: 2 spec.

e. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 spec.

Chlorodiella barbata (Borradaile)

a. Saipan, Marianas Islands; 1949; P. E. Cloud; Loc. C-IX: 9 spec.
b. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 4 spec.
c. Lagoon west of Saipan, Marianas Islands; April 8, 1949; P. E. Cloud; Loc. B-2; taken from vegetation and sand brought up by diving with faceplate: 67 spec.
d. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 18 spec.
e. Lagoon west of Saipan, Marianas Islands; May 3, 1949; P. E. Cloud; Loc. E-4: 2 spec.
f. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 23 spec.
g. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 4 spec.
h. Onotoa, Gilbert Islands; about 1 mile S. 32° W. from Tekawa church at lagoon margin of S. end of Aon te Baba reef stretch. From patch reefs rising above 9 ft. (reduced to mean low tide) limesand bottom to within 1 ft. of the surface; July 31, 1951; P. E. Cloud; Loc. GOC-29: 2 spec.
i. Onotoa, Gilbert Islands; NW. Onotoa about 1300 ft. NE. from Namokoro, in an area of gravelly sand bottom with maximum depths of 12-14 ins. at low tide and with occasional heads of digitate Porites lobata; August 21, 1951; P. E. Cloud; Loc. GOC-39: 2 spec.
j. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon. The bottom is of low scattered dead and living coral patches on intervening limemud and limesand about 30-40% seds. and 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 1 spec.
k. Bikati Island, Butaritari Atoll, Gilbert Islands; about $\frac{1}{2}$ mile E. offshore from the central part of Bikati Island in pocket of broad area of Heliopora reef. NW. Butaritari; September 3, 1951; P. E. Cloud; Loc. GBC-2: 3 spec.

Chlorodiella cytherea (Dana)

a. Saipan, Marianas Islands; from a single large head of Acropora leptocyathus; April 7, 1949; P. E. Cloud: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 7, 1949; P. E. Cloud; Loc. A-11; from coral heads, 4-6 ft. deep: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 2 spec.
d. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 4 spec.

e. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 2 spec.
f. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 17 spec.
g. Bikati Island, Butaritari Atoll, Gilbert Islands; about ½ mile E. offshore from the central part of Bikati Island in pocket of broad area of Heliopora reef, NW. Butaritari; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.
h. Onotoa, Gilbert Islands; about 1 mile S. 32° W. from Tekawa church at lagoon margin of S. end of reef stretch known as Aon te Baba; from patch reefs rising above 9 ft. (reduced to mean low tide) limesand bottom to within 1 ft. of the surface; July 31, 1951; P. E. Cloud; Loc. GOC-29: 1 spec.

Chlorodiella laevissima (Dana)
a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 7 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 17 spec.
c. Onotoa, Gilbert Islands; about 8600 ft. N. 18° W. from Tabuarorae Maneaba in 17 ft. water mean low tide; August 10, 1951; P. E. Cloud; Loc. GOC-35: 1 spec.
d. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef near center of atoll. Collected from ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.
e. Onotoa, Gilbert Islands; about 3½ miles N. 31° W. from Tabuarorae Maneaba near center of Te Rawa ni Bao, a pass in the S. part of the leeward reef. Collected from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 3 spec.

Chlorodiella nigra (Forskål)
a. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 19 spec.
b. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 13 spec.
c. Onotoa, Gilbert Islands; about 1 mile S. 32° W. from Tekawa church at lagoon margin of S. end of reef stretch known as Aon te Baba. Collected from patch reefs rising above 9 ft. (reduced to mean low tide) limesand bottom to within 1 ft. of the surface; July 31, 1951; P. E. Cloud; Loc. GOC-29: 1 spec.
d. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon. The bottom is of low scattered dead and living coral patches on intervening limemud and limesand about 30-40% seds. and 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 12 spec.

Chlorodopsis areolata (H. Milne Edwards)
a. Onotoa, Gilbert Islands; tidepool in Heliopora flat, 2 ft. deep; August 1, 1951; A. H. Banner: 1 spec.

b. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-7: 2 spec.
c. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 4 spec.
d. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-10-12: 3 spec.
e. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 1 spec.
f. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 1 spec.
g. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 1 juv.
h. Onotoa, Gilbert Islands; SE. end of reef area known as Rakai Ati. S. side of big windward point of reef near center of the atoll. From a ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 3 spec.
i. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks; near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.

Chlorodopsis melanodactylus A. Milne Edwards
a. Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-8; taken from dead coral and algal rock at a depth of about 10 ft: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 10 spec.
c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 4 spec.
d. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 17 spec.
e. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. A-6: 3 spec.
f. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-10-12: 2 spec.
g. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 5 spec.
h. Onotoa, Gilbert Islands; Heliopora flat, tidepool, 2 ft. deep; August 1, 1951; A. H. Banner: 2 spec.
i. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 1 spec.
j. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area. S. side of big windward point of reef near center of the atoll. From ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.
k. Onotoa, Gilbert Islands; NW. Onotoa, about 1300 ft. NE. from Namokoro, in an area of gravelly sand bottom with maximum depths of about 12-14 ins. at low tide and with occasional heads of digitate Porites lobata; August 21, 1951; P. E. Cloud; Loc. GOC-39: 1 spec.

Chlorodopsis pilumnoides (White)
a. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a; 1 spec.
b. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 1 spec.

c. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area. S. side of big windward point of reef near center of the atoll; from $\frac{1}{2}$ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 3 spec.

d. Onotoa, Gilbert Islands; about $3\frac{1}{4}$ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec.

e. Onotoa, Gilbert Islands; about 9300 ft. N. 30° W. from Tabuarorae Maneaba in S. part of Te Rawa Tekatobibi, a pass through the S. end of the leeward reef; from patch reefs rising to an occasional maximum of within 4 ft. of the surface from a bottom sounded at 18 ft.; August 23, 1951; P. E. Cloud; Loc. GOC-53: 1 spec.

Chlorodopsis pugil (Dana)

a. Saipan, Marianas Islands; from a single large head of Acropora leptocyathus; April 7, 1949; P. E. Cloud: 2 spec.

b. Saipan, Marianas Islands; P. E. Cloud; Loc. C-IX: 1 spec.

c. Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-8, taken from dead coral and algal rock at a depth of about 10 ft.: 3 spec.

d. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 7 spec.

e. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 17 spec.

f. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 2 spec.

g. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 8 spec.

h. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.

i. Lagoon west of Saipan, Marianas Islands; April 19, 1949; P. E. Cloud; Loc. F-X: 2 spec.

j. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 8 spec.

k. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 2 spec.

l. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 3 spec.

m. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 4 spec.

n. Onotoa, Gilbert Islands; about 1 mile S. 32° W. from Tekawa church at lagoon margin of S. end of Aon te Baba reef stretch; from patch reefs rising above 9 ft. (reduced to mean low tide) limesand bottom to within 1 ft. of the surface; July 31, 1951; P. E. Cloud; GOC-29: 7 spec.

o. Onotoa, Gilbert Islands; NW. Onotoa, about 1300 ft. NE. from Namokoro, in an area of gravelly sand bottom with maximum depths of about 12-14 ins. at low tide and with occasional heads of digitate Porites lobata; August 21, 1951; P. E. Cloud; Loc. GOC-39: 1 spec.

p. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon; bottom of low scattered dead and living coral patches on intervening limemud and limesand about 30-40% seds. and 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 10 spec.

Cyclodius ornatus Dana

a. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 1 spec.

b. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 spec.

c. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area; S. side of big windward point of reef near center of atoll; from ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.

d. Likiep Atoll, Marshall Islands; from corals growing on submerged sandy sediment on inner edge of reef between Nado and Likiep Islands; December, 1951; F. S. MacNeil; Loc. 830: 1 spec.

Cymo andreossyi (Audouin)

a. Matuis Beach, NW. Saipan, Marianas Islands; taken mostly from clump of brown Acropora and partly from Pocillopora damicornis cespitosa; December 17, 1948; P. E. Cloud: 2 spec.

b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 4 spec.

c. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 1 spec.

d. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from offshore end of Government Station jetty and 1200 ft. directly offshore from lagoon end of Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 3 spec.

e. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 spec.

f. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef near center of atoll; from ½ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.

Cymo deplanatus A. Milne Edwards

a. Oneroa Island, Raroia Atoll, Tuamotu Islands; from outer reef pavement area or zone near shore at night; August 4, 1952; J. P. E. Morrison; Loc. 2040: 2 spec.

Cymo quadrilobatus Miers

a. Onotoa, Gilbert Islands; ocean shelf, from Pocillopora, 25 ft. deep; August 4, 1951; A. H. Banner; Loc. A-4: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-620: 3 spec.

Dacryopilumnus rathbunae Balss

a. Hagman Point, Saipan, Marianas Islands; under rock; December 26, 1948; P. E. Cloud: 3 spec.

Daira perlata (Herbst)

a. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 6 spec.
e. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 4 spec.
f. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 7 spec.
g. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-16: 1 spec.
h. Onotoa, Gilbert Islands; August 6, 1951; A. H. Banner; Loc. A-17: 1 spec.
i. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; the small purplish knobby crabs (= Daira) from holes in the boring sea urchin zone of dissected pavement (algae covered); edge of outer reef, a little behind the Lithothamnion ridge; fishing at night; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 16 spec.
j. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1972-1973: 1 spec.
k. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-411: 1 spec.

Domecia glabra Alcock

a. Lagoon west of Saipan, Marianas Islands; April 7, 1949; P. E. Cloud; Loc. A-11, from coral heads in 4-6 ft. of water: 1 spec.
b. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef near center of atoll; from $\frac{1}{2}$ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.

Domecia hispida Eydoux & Souleyet

a. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-4: 3 spec.
b. Onotoa, Gilbert Islands; August 6, 1951; A. H. Banner; Loc. A-14: 1 spec. (from Pocillopora).
c. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef near center of atoll; from $\frac{1}{2}$ mile strip across the reef; August 20, 1951; P. E. Cloud; Loc GOC-36: 3 spec.

d. Onotoa, Gilbert Islands, about 3½ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8 ft. - 10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 3 spec.

Eriphia scabricula Dana

a. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 2 spec.
b. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec. (qu.)
c. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-7: 1 spec.
d. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 3 spec.
e. Onotoa, Gilbert Islands; July 20, 1951; A. H. Banner; Loc. A-11: 1 spec.
f. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-10-12: 1 spec.
g. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 4 spec.
h. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 4 spec.
i. North end of Ngarumaoa Island, Raroia Atoll Tuamotu Islands; inner reef flats near shore, mostly around larger rocks, active at night; September 2, 1952; J. P. E. Morrison; Loc. 2245: 1 spec.

Eriphia sebana (Shaw & Nodder)

a. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner: 1 spec.
b. Onotoa, Gilbert Islands; August 9, 1951; A. H. Banner; Loc. B-3: 7 spec.
c. Likiep Atoll, Marshall Islands; from reef between Nado Island and Likiep Island; at night by flashlight, low tide; December 14, 1951; F. S. MacNeil; Loc. 815: 3 spec.
d. Oneroa Island, Raroia Atoll, Tuamotu Islands; from under rock just below low tide line at night on inner reef flats, S. end of island; August 7, 1952; J. P. E. Morrison; Loc. 2077: 1 spec.
e. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef, fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; S. end of Island; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 1 spec.
f. North of Kahongi Island, Raroia Atoll, Tuamotu Islands; from outer end of channel and from outer beach pavement flats of outer reef in same area; red eyed crab; July 25, 1952; J. P. E. Morrison; Loc. 1994: 1 spec.
g. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; red eyed rock crab from pavement pool zone of outer reef, eating a Conus sponsalis (crushing it in crushing claw when caught) at just about dusk, at low tide, out of water and active on reef flat at low tide at night apparently; August 31, 1952; J. P. E. Morrison; Loc. 2232: 1 spec.

h. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-4: 1 spec.
i. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-6: 1 spec.
j. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-666: 1 spec.
k. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-185: 1 spec.
l. Southwest corner of Opakea Island, Raroia Atoll, Tuamotu Islands; red eyed rock crab from shore of channel at outer reef flat; August 27, 1952; J. P. E. Morrison; Loc. 2197: 1 spec.

Etisus (Etisodes) electra (Herbst)
a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 1 spec.
b. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 2 spec.
c. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 2 spec.

Etisus (Etisodes) molokaiensis (Rathbun)
a. Saipan, Marianas Islands; 1949; P. E. Cloud; Loc. D-9: 1 spec.

Etisus (Etisodes) dentatus (Herbst)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-7: 1 spec.
b. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 1 spec.

Etisus (Etisodes) splendidus Rathbun
a. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1972, 1973: 1 spec.
b. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1981: 1 spec.
c. South end of Opeaka Island, Raroia Atoll, Tuamotu Islands; red crab from inner reef off the S. end; August 17, 1952; J. P. E. Morrison; Loc. 2135: 1 spec.

Etisus (Etisodes) spec.
a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 1 spec.

Etisus (Etisus) laevimanus Randall
a. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 1 spec.

Globopilumnus globosus (Dana)
a. Nado Island, Likiep Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 827: 1 spec.

b. West of Ailuk Island, Ailuk Atoll, Marshall Islands; leeward reef seaward side; 1951-1952; F. S. MacNeil; Loc. 847: 1 spec.
c. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from holes in reef near Lithothamnion ridge; July 9, 1952; J. P. E. Morrison; Loc. 1904: 4 spec.
d. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef flats; July 11, 1952; J. P. E. Morrison; Loc. 1920: 1 spec.

Heteropilumnus integer (Miers)
a. Lagoon west of Saipan, Marianas Islands; May 4, 1949; P. E. Cloud; E-8, from coral rock: 2 spec.

Juxtaxanthias tetraodon (Heller)
a. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 4 spec.
b. Oneroa Island, Raroia Atoll, Tuamotu Islands; from outer reef, zone just behind the Lithothamnion ridge or in it, at night; August 4, 1952; J. P. E. Morrison; Loc. 2042: 1 spec.

Lachnopodus tahitensis (De Man)
a. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 2 spec.

Liocarpilodes armiger pacificus Balss
a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 13 spec.
b. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 4 spec.
e. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
f. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 3 spec.
g. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 5 spec.

Liocarpilodes integerrimus (Dana)
a. Lagoon west of Saipan, Marianas Islands; April 27, 1949; P. E. Cloud; Loc. A-7: 2 spec.
b. Lagoon west of Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-8, taken from dead coral at a depth of about 10 ft.: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; April 9, 1949; P. E. Cloud; Loc. C-1: 6 spec.
d. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 spec.

e. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 3 spec.
f. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 6 spec.
g. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.
h. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 13 spec.
i. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 12 spec.
j. Saipan, Marianas Islands; 1949; P. E. Cloud; Loc. C-IX: 1 spec.
k. Ine Anchorage, Arno Atoll, Marshall Islands; from coral rock of reef flat; July-August 1950; J. H. Wells; Loc. 6: 1 spec.
l. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 spec.

Lophozozymus pulchellus A. Milne Edwards
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. C-7a: 1 spec.

Lophozozymus superbus (Dana)
a. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks, etc., near the shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.

Lybia tesselata (Latreille)
a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
b. Onotoa, Gilbert Islands; from Pocillopora; August 6, 1951; A. H. Banner; Loc. A-14: 1 spec.
c. Homohomo Island, Raroia Atoll, Tuamotu Islands; under rocks, etc., near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 2 spec.

Lydia annulipes (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-508: 1 spec.
b. South Loi Island, Kwajalein Atoll; Marshall Islands; windward reef flat; 1951-1952; F. S. MacNeil; Loc. 894: 1 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; edge of water at low tide; outer reef flats opposite the village; August 23, 1952; J. P. E. Morrison; Loc. 2176: 3 spec.
d. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; at night at low tide on gravelly lagoon shore near beach rocks; August 2, 1952; J. P. E. Morrison; Loc. 2035: 1 spec.
e. Puka Puka Island, Raroia Atoll, Tuamotu Islands; landward edge of outer reef flats on and under rocks; August 28, 1952; J. P. E. Morrison; Loc. 2209: 1 spec.

Medaeus elegans A. Milne Edwards
a. Onotoa, Gilbert Islands; toward S. end of Rakai Ati lee reef stretch, in an area of small coral patches fairly thickly interspersed on limesand and coral debris, the bottom is at depths of 3-4 ft. at low tide; July 26, 1951; P. E. Cloud: Loc. GOC-24: 1 spec.

Medaeus ? ornatus Dana

a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-7: 2 spec.

Paraxanthias notatus (Dana)

a. Unai, Finauchuluga, Saipan, Marianas Islands; January 30, 1949; P. E. Cloud: 1 spec.
b. Lagoon N. of Matuis Beach, NW. Saipan, Marianas Islands; from head of brown Acropora; December 12, 1948; P. E. Cloud: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 6 spec.
d. Onotoa, Gilbert Islands; from Pocillopora; August 6, 1951; A. H. Banner; Loc. A-14: 2 spec.
e. Onotoa, Gilbert Islands; back ridge trough, about 600 ft. offshore from Pacific Science Board camp at the outer margin of the windward reef, just inshore from the algal ridge and surge channels; this part of the reef never dries even at low tide and generally has at least a foot or two of water above it; August 1, 1951; P. E. Cloud; Loc. GOC-32: 2 spec.
f. Nado Island, Likiep Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 827: 8 spec.
g. South Loi Island, Kwajalein Atoll, Marshall Islands; windward reef flat; 1951-1952; F. S. MacNeil; Loc. 894: 2 spec.

Paraxanthias parvus (Borradaile)

a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 22 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 4 spec.

Paraxanthias ponapensis (Rathbun)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-20: 2 spec.

Phymodius laysani Rathbun

a. Onotoa, Gilbert Islands; about 9300 ft. N. 30° W. from Tabuarorae Maneaba in S. part of Te Rawa Tekatobibi, a pass through the south end of the leeward reef; from patch reefs rising to an occasional maximum of within 4 ft. of the surface from a bottom sounded at 18 ft.; August 23, 1951; P. E. Cloud; Loc. GOC-53: 1 spec.
b. Nado Island, Likiep Atoll, Marshall Islands; 1951-1952: F. S. MacNeil; Loc. 827: 1 spec.
c. West of Ailuk Island, Ailuk Atoll, Marshall Islands; seaward side of leeward reef; 1951-1952; F. S. MacNeil; Loc. 847: 1 spec.

Phymodius nitidus (Dana)

a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 3 spec.

Phymodius obscurus (Lucas)

a. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner; Loc. B-5: 2 spec.

Phymodius ungulatus (H. Milne Edwards)

a. Saipan, Marianas Islands; from single large head of Acropora leptocyathus; April 7, 1949; P. E. Cloud: 1 spec.
b. Matuis Beach, NW. Saipan, Marianas Islands; taken mostly from clump of brown Acropora and partly from Pocillopora damicornis cespitosa; December 17, 1948; P. E. Cloud: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 3 spec.
d. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 4 spec.
e. Bikati Island, Butaritari Atoll, Gilbert Islands; about $\frac{1}{5}$ mile E. offshore from the central part of Bikati Island in pocket of broad area of Heliopora reef, NW. Butaritari; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.
f. Otikaheru Island, Raroia Atoll, Tuamotu Islands; brackish enclosed lagoon on lagoon side of island; July 29, 1952; J. P. E. Morrison; Loc. 2015: 2 juv.

Pilodius paumotensis Rathbun

a. Nado Island, Likiep Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 827: 9 spec.

Pilumnus cursor A. Milne Edwards

a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; May 4, 1949; P. E. Cloud; Loc. E-8, from coral rock: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; April 28, 1949; P. E. Cloud; Loc. 2, from $\frac{1}{2}$ ton block of dead coral-algal rock taken on anchor of LT. 535: 1 spec.

Pilumnus forskali coerulescens A. Milne Edwards

a. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. A-6: 1 spec.
b. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 1 spec.
c. Onotoa, Gilbert Islands; tidepool in Heliopora flat, 2 ft. deep; August 1, 1951; A. H. Banner: 2 spec.

Pilumnus tahitensis De Man

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-515: 1 spec.

Platypodia granulosa (Rüppell)

a. Onotoa, Gilbert Islands; August 8, 1952; A. H. Banner; Loc. B-4: 3 spec.
b. Onotoa, Gilbert Islands; S. portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board campstrip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 spec.

Platypodia semigranosa (Heller)

a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.

Pseudozius caystrus (H. Milne Edwards)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-668: 1 spec.
b. South Loi Island, Kwajalein Atoll, Marshall Islands; windward reef flat; 1951-1952; F. S. MacNeil; Loc. 894: 1 skin.
c. Takoke Island, Raroia Atoll, Tuamotu Islands; under stones about high tide line or a little below; July 22, 1952; J. P. E. Morrison; Loc. 1968: 1 spec.

Xanthias lamarcki (H. Milne Edwards)

a. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 7, 1949; P. E. Cloud; Loc. A-11, from coral heads, 4-6 ft. water: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; April 19, 1949; P. E. Cloud; Loc. F-X: 2 spec.
d. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 3 spec.
e. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 1 spec.
f. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 4 spec.
g. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec. (qu.)
h. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 2 spec.
i. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A-10-12: 3 spec.
j. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 7 spec.
k. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 1 spec.
l. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg: 1 spec.
m. Homohomo Island, Raroia Atoll, Tuamotu Islands; from under rocks, etc., near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.
n. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 1 spec.
o. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 spec.

Xanthias punctatus (H. Milne Edwards)

a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-6: 1 spec.

Xantho exaratus (H. Milne Edwards)

a. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 6 spec.
b. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-2: 1 spec.
c. South end of Oneroa Island, Raroia Atoll, Tuamotu Islands; white rock crab from inner reef flats just below low tide line; August 7, 1952; J. P. E. Morrison; Loc. 2078: 1 spec.

Xantho gracilis (Dana)

a. Opakoa Island, Raroia Atoll, Tuamotu Islands; speckled crab under rocks below low tide, SE. point of island; August 26, 1952; J. P. E. Morrison; Loc. 2196: 1 spec.

Xantho sanguineus (H. Milne Edwards)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-46: 4 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-48: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-667: 3 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-7: 1 spec.
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-192: 1 spec.
f. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 6 spec.
g. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-2: 16 spec.
h. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 6 spec. (qu.)
i. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 16 spec.
j. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. A-6: 1 spec.
k. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-7: 1 spec.
l. Onotoa, Gilbert Islands; August 7, 1951; A. H. Banner; Loc. B-3: 2 spec.
m. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 35 spec.
n. Lae Island, Lae Atoll, Marshall Islands; windward side under rocks; 1951-1952; F. S. MacNeil; Loc. 877: 2 spec.

Zosimus aeneus (L.)

a. Ailuk Atoll, Marshall Islands; native collectors; 1951-1952; F. S. MacNeil; Loc. 855: 1 spec.
b. Leeward side of Ailuk Island, Ailuk Atoll, Marshall Islands; near west end of island; 1951-1952; F. S. MacNeil; Loc. 841: 2 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; spotted rock crabs brought in from the outer reef; July 18, 1952; J. P. E. Morrison; Loc. 1950: 2 spec.

d. Homohomo Island, Raroia Atoll, Tuamotu Islands; spotted crab from pool in boring sea urchin zone of outer reef flats; July 21, 1952; J. P. E. Morrison; Loc. 1963: 1 spec.
e. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1972, 1973: 3 spec.
f. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 14 spec.
g. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-503: 1 spec.
h. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-512: 1 spec.

Family Goneplacidae
Subfamily Pseudorhombilinae

Litocheira aranea Tesch
a. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 1 spec.

Family Pinnotheridae

Xanthasia murigera White
a. Ujae lagoon, Ujae Atoll, Marshall Islands; from inside of the shell of a large live Tridacna; 1951, 1952; F. S. MacNeil; Loc. 923: 2 females, 1 male.

Family Ocypodidae

Macrophthalmus bosci (Audouin)
a. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 3 spec.
b. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 9 spec.

Ocypode ceratophthalma (Pallas)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-680: 1 spec.
b. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. B 1-6: 2 spec.
c. Onotoa, Gilbert Islands; sand beach, ocean side; August 1951; A. H. Banner: 4 spec.
d. Ailuk Island, Ailuk Atoll, Marshall Islands; from inner rubble flat on seaward reef, at night; December 24, 1951; F. S. MacNeil; Loc. 835: 1 spec.
e. Taka Atoll, Marshall Islands; gray land crab; December 5-9, 1951; F. R. Fosberg; Loc. 58: 1 spec.
f. Englamij Island, Ujae Atoll, Marshall Islands; running on sandflat above high tide level; March 9, 1952; F. R. Fosberg; Loc. 20: 1 spec.

g. Bikar Island, Bikar Atoll, Marshall Islands; above high tide level on sand at night; August 6, 1952; F. R. Fosberg; Loc. 1078: 2 spec.
h. Bikar Island, Bikar Atoll, Marshall Islands; on sand above high tide level; August 8, 1952; F. R. Fosberg; Loc. 1083, 1084: 2 spec.
i. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; ghost crab dug out of sand beach (intertidal) in daytime, lagoon shore; August 7, 1952; J. P. E. Morrison; Loc. 2080: 2 spec.

Ocypode cordimana Desmarest
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-149: 1 spec.
b. Onotoa, Gilbert Islands; sand beach, ocean side; August 1951; A. H. Banner: 1 spec.
c. Utirik Island, Utirik Atoll, Marshall Islands; burrowing white land crab, dug out of burrows in the sand flat, west part of island; December 1, 1951; F. R. Fosberg; Loc. 49: 3 spec.
d. Jemo Island, Marshall Islands; land crab found generally over the island; December 18-22, 1951; F. R. Fosberg; Loc. 71: 2 spec.
e. Ulika Island, Ailuk Atoll, Marshall Islands; gray land crab attracted to coconut meat in coconut plantation; December 29, 1951; F. R. Fosberg; Loc. 79: 1 spec.
f. Almeni Island, Bikar Atoll, Marshall Islands; on sand; August 9, 1952; F. R. Fosberg; Loc. 1082: 1 spec.

Ocypode spec. (juv.)
a. Bikar Island, Bikar Atoll, Marshall Islands; above high tide level on sand at night; August 6, 1952; F. R. Fosberg; Loc. 1076: 1 juv.
b. Ailuk Atoll, Marshall Islands; islet N. of Baojen; on top of beach; December 30-31, 1951; F. R. Fosberg; Loc. 503: 1 juv.

Uca gaimardi (H. Milne Edwards)
a. West of Port Phaeton, on S. side of Taravao Isthmus, Tahiti, Society Islands; grassy and fern covered edge of swamp, black mud, water brackish or incomplete salt; June 21, 1952; J. P. E. Morrison; Loc. 1816: 1 spec.

Uca tetragonon (Herbst)
a. Onotoa, Gilbert Islands; August 10, 1951; A. H. Banner; Loc. B-6: 9 spec.
b. South end of Oneroa Island, Raroia Atoll, Tuamotu Islands; fiddler crabs from holes in white sand covered (filmed) pavement rock (intertidal), rock flats on lagoon side; August 7, 1952; J. P. E. Morrison; Loc. 2081: 31 spec.

Family Grapsidae
Subfamily Grapsinae

Geograpsus crinipes Dana
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-3: 1 spec.
b. Bock Island, Ujae Atoll, Marshall Islands; gray crab in hole in Pisonia trunk; February 23, 1952; F. R. Fosberg; Loc. 7: 1 spec.

c. Alle Island, Ujae Atoll, Marshall Islands; large gray crab under loose bark of rotten coconut log; March 10, 1952; F. R. Fosberg; Loc. 11: 1 spec.
d. Bock Island, Ujae Atoll, Marshall Islands; gray crab in coconut trash; February 17-20, 1952; F. R. Fosberg; Loc. 21: 1 spec.
e. Utirik Island, Utirik Atoll, Marshall Islands; land crab; December 1, 1951; F. R. Fosberg; Loc. 50: 1 spec.
f. Jemo Island, Marshall Islands; gray land crab in burrows under guano layer in Pisonia grove; December 18-22, 1951; F. R. Fosberg; Loc. 72: 2 spec.
g. Islet N. of Baojen, Ailuk Atoll, Marshall Islands; flat gray crab, well above high tide mark; December 31, 1951; F. R. Fosberg; Loc. 78: 1 spec.
h. Lae Atoll, Marshall Islands; gray crab; January 6-10, 1952; F. R. Fosberg; Loc. 88: 1 spec.
i. Bikar Island, Bikar Atoll, Marshall Islands; above high tide level on sand at night; August 6, 1952; F. R. Fosberg; Loc. 1079: 1 spec.
j. Bikar Island, Bikar Atoll, Marshall Islands; in small Messerschmidia tree; August 6, 1952; F. R. Fosberg; Loc. 1080: 1 spec.
k. Takoke Island, Raroia Atoll, Tuamotu Islands; July 22, 1952; J. P. E. Morrison; Loc. 1968: 1 juv.
l. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; brown rock crab of lagoon shore, in contrast to red painted one of hard outer reef rocks; August 8, 1952; J. P. E. Morrison; Loc. 2095: 2 spec.

Geograpsus grayi (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-416: 1 juv.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-507: 2 spec.
c. Alle Island, Ujae Atoll, Marshall Islands; land crab; March 10, 1952; F. R. Fosberg; Loc. 19: 2 spec.
d. Bock Island, Ujae Atoll, Marshall Islands; small gray crabs; February 17-20, 1952; F. R. Fosberg; Loc. 22: 2 spec.
e. Wotho Island, Wotho Atoll, Marshall Islands; purple land crab in coconut trash, judging by number of holes must be common all over island; February 14-15, 1952; F. R. Fosberg; Loc. 29: 1 spec.
f. Lojiron Island, Taka Atoll, Marshall Islands; dark purple land crab under boulder in Pisonia grove; December 7, 1951; F. R. Fosberg; Loc. 54: 1 spec.
g. Watwerok Island, Taka Atoll, Marshall Islands; land crab, gray brown, legs banded with lighter gray, under rotting coconut log; December 9, 1951; F. R. Fosberg; Loc 56: 1 juv.
h. Lae Atoll, Marshall Islands; land crabs in openings under stones; January 6-10, 1952; F. R. Fosberg; Loc. 87: 4 spec.
i. Wake Island, Wake Atoll; under sticks and stones in wooded area; April 20, 1952; F. R. Fosberg; Loc. 91: 4 spec.
j. Takoke Island, Raroia Atoll, Tuamotu Islands; true land crab from under rock on floor of open forest; July 11, 1952; J. P. E. Morrison; Loc. 1912: 1 spec.
k. Mataira Island, Raroia Atoll, Tuamotu Islands; small land crab at night; July 16, 1952; J. P. E. Morrison; Loc. 1945: 1 spec.

Geograpsus lividus stormi De Man

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-399: 1 spec.

Grapsus longitarsis Dana

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-400: 1 spec.
b. Onotoa, Gilbert Islands; July-August 1951; A. H. Banner: 4 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; smaller species of shore rock crab, edge of water at low tide, outer reef flats opposite the village; August 23, 1952; J. P. E. Morrison; Loc. 2176: 10 spec.
d. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; inner reef flats near shore mostly around larger rocks, active at night; September 2, 1952; J. P. E. Morrison; Loc. 2245: 2 spec. (1 ovig.).

Grapsus tenuicrustatus (Herbst)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-704: 1 spec.
b. Onotoa, Gilbert Islands; seaward reef; July-August, 1951; A. H. Banner: 3 spec.
c. Onotoa, Gilbert Islands; windward reef; August 30, 1951; P. E. Cloud: 3 spec.
d. Bock Island, Ujae Atoll, Marshall Islands; in hole in Messerschmidia trunk; February 20, 1952; F. R. Fosberg; Loc. 6: 1 spec.
e. Jemo Island, Marshall Islands; on rocks above high tide level; December 18-22, 1951; F. R. Fosberg; Loc. 65: 1 spec.
f. Passage between Kanome and Brije, Pokak Atoll, Marshall Islands; above high tide on rocks; July 23, 1952; F. R. Fosberg; Loc. 1067: 1 spec.
g. South Island, Pokak Atoll, Marshall Islands; abundant on rocks just above water, seeming to avoid going into water except when pursued; often seen above high tide level; July 26, 1952; F. R. Fosberg; Loc. 1068: 1 spec.
h. Passage between Almeni and Jaliklik, Bikar Atoll, Marshall Islands; on beach rock just above high tide; August 9, 1952; F. R. Fosberg; Loc. 1081: 1 spec.
i. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; young red shore rock crab, edge of water at low tide; outer reef flats opposite the village; August 23, 1952; J. P. E. Morrison; Loc. 2176: 3 spec.

Metopograpsus thukuhar (Owen)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-400: 5 spec.

Pachygrapsus minutus A. Milne Edwards

a. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec.

Pachygrapsus planifrons De Man

a. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 1 spec.

b. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 5 spec. (qu.)
c. Onotoa, Gilbert Islands; July 26, 1951; A. H. Banner; Loc. A-6: 1 spec.
d. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-7: 1 spec.
e. Onotoa, Gilbert Islands; November 16, 1951; D. E. Strasburg; Loc. A-I-II: 34 spec.
f. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; rocks and gravel just below low tide line on gravel flats along inner reef near lagoon shore; August 6, 1952; J. P. E. Morrison; Loc. 2073: 1 spec.

Pachygrapsus plicatus (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-665: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-666: 6 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef flats; July 11, 1952; J. P. E. Morrison; Loc. 1920: 3 spec.
d. Oneroa Island, Raroia Atoll, Tuamotu Islands; small rock crabs from low tide line or just above (wet area) on large reef block about 40 yds. out on reef pavement area from shore, collected at night; August 5, 1952; J. P. E. Morrison; Loc. 2055: 9 spec.

Pachygrapsus spec.
a. Homohomo Island, Raroia Atoll, Tuamotu Islands; under rocks, etc., near shore; July 21, 1952; J. P. E. Morrison; Loc. 1962: 1 spec.

Subfamily Varuninae

Pseudograpsus albus Stimpson
a. Takoke Island, Raroia Atoll, Tuamotu Islands; under stones about high tide line, or little below; July 22, 1952; J. P. E. Morrison; Loc. 1968: 7 spec.

Subfamily Sesarminae

Cyclograpsus longipes Stimpson
a. Takoke Island, Raroia Atoll, Tuamotu Islands; under stones about high tide line, or little below; July 22, 1952; J. P. E. Morrison; Loc. 1968: 4 spec.
b. Ohava Island, Raroia Atoll, Tuamotu Islands; under rocks, etc., on lagoon side of channel or incomplete channel; July 27, 1952; J. P. E. Morrison; Loc. 1997: 3 spec.

Cyclograpsus parvulus De Man
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt: 5 spec.
b. Ohava Island, Raroia Atoll, Tuamotu Islands; under rocks, etc., on lagoon side of channel or incomplete channel; July 27, 1952; J. P. E. Morrison; Loc. 1997: 5 spec.

Metasesarma aubryi A. Milne Edwards

a. Arno Atoll; 1950; R. W. Hiatt; Loc. E 1-65a: 2 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-418: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-424: 2 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt: 2 spec.
e. Bock Island, Ujae Atoll, Marshall Islands; from 4-6 ins. beneath rubble surface in interstices between coconut trash, near lagoon; February 20, 1952; F. R. Fosberg; Loc. 950: 1 spec.

Metasesarma rousseauxi H. Milne Edwards

a. Matuis Beach, NW. Saipan, Marianas Islands; December 19, 1948; P. E. Cloud: 2 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-418: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-662: 3 spec.
d. Lato Island, Likiep Atoll, Marshall Islands; small gray land crabs in beach drift well above high tide mark; December 12-15, 1951; F. R. Fosberg; Loc. 63: 2 spec.
e. Lojjaiong Island, Kwajalein Atoll, Marshall Islands; in interstices in cut bank of small pebbles above high tide level; January 15, 1952; F. R. Fosberg; Loc. 664: 18 spec.
f. Lojjairok Island, Kwajalein Atoll, Marshall Islands; from decayed spot in trunk of Messerschmidia argentea tree about 2 m from ground; January 15, 1952; F. R. Fosberg; Loc. 682: 1 spec.
g. Tepaturea, E. side (windward shore) of Taravao Isthmus, Tahiti, Society Islands; under cobbles; June 21, 1952; J. P. E. Morrison; Loc. 1815: 4 spec.

Sesarma rotundatum Hess

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-413: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-18: 2 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-172: 1 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt: 3 spec.
e. Ujae Island, Ujae Atoll, Marshall Islands; orange-gray crab from hole in live coconut trunk; March 13, 1952; F. R. Fosberg; Loc. 16: 1 spec.

Subfamily Plagusinae

Percnon abbreviatum (Dana)

a. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night, mostly from near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 1 spec.

Percnon planissimum (Herbst)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-10: 1 spec.

b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-42: 6 spec.
c. Onotoa, Gilbert Islands; July 20, 1951; A. H. Banner; Loc. A-11: 4 spec.
d. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-8-9: 1 spec.

Plagusia speciosa Dana
a. West of Ailuk Island, Ailuk Atoll, Marshall Islands; seaward side of leeward reef; 1951-1952; F. S. MacNeil; Loc. 847: 1 spec.
b. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from outer reef fishing at night, mostly near edge of outer reef, a little behind the Lithothamnion ridge; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 5 spec.
c. Tenuku Haupapatea Island, Raroia Atoll, Tuamotu Islands; from algae zone just behind outer reef edge (boring urchin zone), outer reef flats; September 5, 1952; J. P. E. Morrison; Loc. 2269: 1 spec.

Family Gecarcinidae

Cardisoma carnifex (Herbst)
a. Onotoa, Gilbert Islands; land crab; July-August, 1951; A. H. Banner: 1 spec.
b. Tehakapikipiki Island, Raroia Atoll, Tuamotu Islands; Pemphis land crabs (Papaka Tupa) from land at night; July 28, 1952; J. P. E. Morrison; Loc. 2010: 6 spec.
c. North end Oneroa Island, Raroia Atoll, Tuamotu Islands; small true land crab collected at night; August 7, 1952; J. P. E. Morrison; Loc. 2080: 1 spec.
d. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; Pemphis crabs (Papaka Tupa) from camp area near lagoon; August 8, 1952; J. P. E. Morrison: Loc. 2094: 2 spec.
e. Oteteu Island Raroia Atoll, Tuamotu Islands; Pemphis land crabs (Papaka Tupa), burrows all over lower ground under Pemphis; August 21, 1952; J. P. E. Morrison; Loc. 2152: 2 spec.

Cardisoma rotumdum (Quoy & Gaimard)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-123: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-514: 1 spec.
c. Bock Island, Ujae Atoll, Marshall Islands; purple land crab from coconut trash in holes in rubble in mixed forest and edge of plantation; February 17-20, 1952; F. R. Fosberg; Loc. 23: 2 spec.

Epigrapsus politus Heller
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-665: 5 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-187: 2 spec.

c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-401: 3 spec.
d. Tepaturea, E. side (windward shore) of Taravao Isthmus, Tahiti, Society Islands; under cobbles; June 21, 1952; J. P. E. Morrison; Loc. 1815: 3 spec.

Gecarcoidea lalandei H. Milne Edwards
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-423: 1 spec.
b. Bock Island, Ujae Atoll, Marshall Islands; purple land crab in coconut trash in holes in rubble in mixed forest and edge of plantation; February 17-20, 1952; F. R. Fosberg; Loc. 23: 1 spec.

Family Hapalocarcinidae

Hapalocarcinus marsupialis Stimpson
a. Onotoa, Gilbert Islands; South portion of northern main island, about 800 ft. SW. from the offshore end of Government Station jetty and 1200 ft. directly offshore from the lagoon end of the Pacific Science Board camp strip; July 25, 1951; P. E. Cloud; Loc. GOC-22: 1 ovig. female in coral.

II. Anomura

HIPPIDEA

Family Albuneidae

Albunea clicti Benedict
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-504: 1 spec.

Family Hippidae

Hippa adactyla Fabricius
a. At mouth of Ahonu river, about 14 km. E. of Papeete, Tahiti, Society Islands; mole crabs from black volcanic sand, intertidal; September 15, 1952; J. P. E. Morrison; Loc. 2294: 1 spec.

Hippa ovalis (A. Milne Edwards)
a. At mouth of Ahonu river, about 14 km. E. of Papeete, Tahiti, Society Islands; mole crabs from black volcanic sand, intertidal; September 15, 1952; J. P. E. Morrison; Loc. 2294: 2 spec.

Hippa pacifica (Dana)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-155: 5 spec.
b. Ine lagoon, Arno Atoll, Marshall Islands; in sand on beach at high tide; June-August 1950; J. H. Wells; Loc. 32: 4 spec.

Family Coenobitidae

Birgus latro (L.)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-419: 1 spec.
b. Onotoa, Gilbert Islands; July-August 1951; A. H. Banner: 1 spec.
c. Rua Island, Ujae Atoll, Marshall Islands; in burrow under 2 inches of peat in Pisonia forest; February 23, 1952; F. R. Fosberg; Loc. 1: 1 spec.
d. Wotho Island, Wotho Atoll, Marshall Islands; in coconut trash; February 15, 1952; F. R. Fosberg; Loc. 26: 1 spec.
e. Enellap Island, Ujelang Atoll, Marshall Islands; burrowing in boulder debris; natives call it "baru" and insist that it climbs coconut trees, they say that it is common on Enellap and Kalo Islands; February 4, 1952; F. R. Fosberg; Loc. 36: 1 spec.
f. Mejurwon Island, Wotho Atoll, Marshall Islands; abundant; March 22, 1952; F. R. Fosberg; Loc. 1448: 1 spec.
g. Kahongi Island, Raroia Atoll, Tuamotu Islands; coconut crab from Pandanus fruit at night (rare at Raroia because always eaten by natives); August 12, 1952; J. P. E. Morrison; Loc. 2113: 1 spec.

Coenobita brevimanus Dana

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-417: 4 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-419: 3 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-426: 3 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-428: 2 spec.
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-438: 3 spec.
f. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-589: 4 spec.
g. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-658: 1 spec.
h. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-660: 1 spec.
i. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-4: 1 spec.
j. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-150: 2 spec.
k. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-403: 1 spec.
l. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-513: 2 spec.
m. Bock Island, Ujae Atoll, Marshall Islands; from coconut trash; February 20, 1952; F. R. Fosberg; Loc. 10: 8 spec.
n. Alle Island, Ujae Atoll, Marshall Islands; around freshly cut coconuts and in and around rotten coconut log in daytime; March 10, 1952; F. R. Fosberg; Loc. 12-15: 1 juv.

o. Kalo Island, Ujelang Atoll, Marshall Islands; on ground; February 4, 1952; F. R. Fosberg; Loc. 41: 1 spec.
p. Mataira Island, Raroia Atoll, Tuamotu Islands; purple clawed land hermit crabs feeding at night on opened green coconuts (juice); July 16, 1952; J. P. E. Morrison; Loc. 1940-1945: 10 spec.
q. Onoroa Island, Raroia Atoll, Tuamotu Islands; purple land hermit crabs (uncommon); August 7, 1952; J. P. E. Morrison; Loc. 2079: 2 spec.

Coenobita carnescens Dana
a. Ujelang Island, Ujelang Atoll, Marshall Islands; on ground; February 6-7, 1952; F. R. Fosberg; Loc. 43: 1 spec. (juv.).

Coenobita perlatus H. Milne Edwards
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-171: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-427: 3 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-592: 1 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-4: 3 spec.
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-17: 1 spec.
f. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-150: 1 spec.
g. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-398: 1 spec.
h. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-403: 2 spec.
i. Onotoa, Gilbert Islands; August 1951; A. H. Banner: 1 spec.
j. Onotoa, Gilbert Islands; Pacific Science Board camp area; July 30, 1951; P. E. Cloud: 96 spec.
k. Lae Island, Lae Atoll, Marshall Islands; lagoon side, beach; 1951-1952; F. S. MacNeil; Loc. 866: 12 spec. (juv.).
l. Torrutj Island, Kwajalein Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 900: 66 spec.
m. Wotho Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 913: 12 spec.
n. Rua Island, Ujae Atoll, Marshall Islands; large red hermit crabs under rotting logs; February 23, 1952; F. R. Fosberg; Loc. 2: 3 spec.
o. Rua Island, Ujae Atoll, Marshall Islands; under rotting coconut logs; February 23, 1952; F. R. Fosberg; Loc. 3: 13 juv.
p. Bock Island, Ujae Atoll, Marshall Islands; from coconut trash; February 20, 1952; F. R. Fosberg; Loc. 9: 1 spec.
q. Alle Island, Ujae Atoll, Marshall Islands; around freshly cut coconuts and in and around rotten coconut log in daytime; March 10, 1952; F. R. Fosberg; Loc. 12-15: 174 juvs.
r. Alle Island, Ujae Atoll, Marshall Islands; in and around coconut log in daytime; colors vary from scarlet to brick red to brownish-red; March 10, 1952; F. R. Fosberg; Loc. 17: 6 spec.
s. Kabben Island, Wotho Atoll, Marshall Islands; March 20, 1952; F. R. Fosberg; Loc. 25: 1 juv.

t. Wotho Island, Wotho Atoll, Marshall Islands; journeying toward sea, ready to lay eggs; February 14-15, 1952; F. R. Fosberg; Loc. 27: 1 ovig. female.

u. Wotho Island, Wotho Atoll, Marshall Islands; attracted to open nuts near camp; February 14-15, 1952; F. R. Fosberg; Loc. 32: 13 juv.

v. Jerko Island, Ujelang Atoll, Marshall Islands; climbing in Scaevola bush, 2 m.; February 4, 1952; F. R. Fosberg; Loc. 42: 1 spec.

w. Utirik Island, Utirik Atoll, Marshall Islands; eating meat from split young eating nuts; December 1, 1951; F. R. Fosberg; Loc. 47: 5 spec.

x. Utirik Island, Utirik Atoll, Marshall Islands; eating meat from split young nuts; December 1, 1952; F. R. Fosberg; Loc. 48: 12 juv.

y. Taka Island, Taka Atoll, Marshall Islands; between stilt roots of Pandanus; December 5, 1951; F. R. Fosberg; Loc. 51: 4 spec.

z. Taka Island, Taka Atoll, Marshall Islands; between stilt roots of Pandanus tree; December 5, 1951; F. R. Fosberg; Loc. 59: 2 spec. (semi-adult).

aa. Lato Island, Likiep Atoll, Marshall Islands; in beach drift, well above high tide mark; December 12-15, 1951; F. R. Fosberg; Loc. 62: 4 juv.

bb. Jemo Island, Marshall Islands; at top of beach; December 18-22, 1951; F. R. Fosberg; Loc. 66: 5 juv.

cc. Jemo Island, Marshall Islands; at top of beach; December 18-22, 1951; F. R. Fosberg; Loc. 67: 4 juv.

dd. Baojen Island, Ailuk Atoll, Marshall Islands; above high tide on sand; December 30, 1951; F. R. Fosberg; Loc. 77: 22 juv.

ee. Enobuoj Island, Kwajalein Atoll, Marshall Islands; around a sack of rotting copra thrown up on the beach; January 19, 1952; F. R. Fosberg; Loc. 82: 4 juv.

ff. Enobuoj Island, Kwajalein Atoll, Marshall Islands; around a sack of rotting copra thrown up on the beach; January 19, 1952; F. R. Fosberg; Loc. 83: 2 spec.

gg. Lae Island, Lae Atoll, Marshall Islands; attracted to open coconuts at night; January 6-10, 1952; F. R. Fosberg; Loc. 89: 2 spec.

hh. Islet N. of Baojen, Ailuk Atoll, Marshall Islands; from beating Pemphis; December 31, 1951; F. R. Fosberg; Loc. 543: 1 spec.

ii. Ailuk Island, Ailuk Atoll, Marshall Islands; from inner rubble flat on seaward reef, at night; December 24, 1951; F. R. Fosberg; Loc. 835: 2 spec. (semi-adult).

jj. Sibylla Island, Pokak Atoll, Marshall Islands; July 20-26, 1952; very common, generally nocturnal, hiding under edges of large boulders during the day, going both lagoon and seaward beaches beginning shortly before sundown, inhabiting principally Turbo lajonkairi shells; July 20-26, 1952; F. R. Fosberg; Loc. 1065: 5 spec.

kk. South Island, Pokak Atoll, Marshall Islands; in cavities and crevices in great boulders on land well above high tide level; July 26, 1952; F. R. Fosberg; Loc. 1069: 10 spec.

ll. Sibylla Island, Pokak Atoll, Marshall Islands; on land; July 27, 1952; F. R. Fosberg; Loc. 1070: 5 spec.

mm. Pokak Island, Pokak Atoll, Marshall Islands; beach above high tide; July 26, 1952; F. R. Fosberg; Loc. 1071: 10 spec.

nn. Tiny Island between Sibylla and Pokak, Pokak Atoll; in cavities and crevices in great boulders above high tide; July 26, 1952; F. R. Fosberg; Loc. 1072: 17 spec.

oo. Bikar Island, Bikar Atoll, Marshall Islands; 3 without shells taken on beach at about sunset when they were visiting the ocean; one with shell taken after dark eating baby turtle (no. 1073); August 6, 1952; F. R. Fosberg; Loc. 1074: 4 spec.

pp. Bikar Island, Bikar Atoll, Marshall Islands; climbing in Messerschmidia tree; August 7, 1952; F. R. Fosberg; Loc. 1086: 2 spec.

qq. Bikar Island, Bikar Atoll, Marshall Islands; under turtle bones and crawling about nearby on sand, well above high tide level outside forest; August 7, 1952; F. R. Fosberg; Loc. 1087-1089: 15 spec.

rr. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from middle to inner zone of outer reef flats opposite village; July 6, 1952; J. P. E. Morrison; Loc. 1866: 1 spec.

ss. Takoke Island, Raroia Atoll, Tuamotu Islands; from leaves, etc. floor of forest; July 11, 1952; J. P. E. Morrison; Loc. 1910, 1911: 38 spec.

tt. Tahuna riri Island, Raroia Atoll, Tuamotu Islands; lagoon beach, sand; Terebra shells; July 27, 1952; J. P. E. Morrison; Loc. 2004: 2 spec.

uu. Oneroa Island, Raroia Atoll, Tuamotu Islands; from native house area, small, selected for shells; August 2, 1952; J. P. E. Morrison; Loc. 2027: 68 spec.

vv. Oneroa Island, Raroia Atoll, Tuamotu Islands; large red hermit crabs (common); August 7, 1952; J. P. E. Morrison; Loc. 2079: 4 spec.

ww. Mataira Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 16, 1952; J. P. E. Morrison; Loc. 1938: 1 spec.

xx. North side of Tekatikati Island, Raroia Atoll, Tuamotu Islands; pavement and sandy patches between coral (and algae) patches in the channel from near lagoon to middle; August 8, 1952; J. P. E. Morrison; Loc. 2088: 1 spec.

yy. North end Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef and drift; August 8, 1952; J. P. E. Morrison; Loc. 2093: 1 spec.

zz. Okaea Island, Raroia Atoll, Tuamotu Islands; from rock flat just below or at (?) high tide line on wide rock flat on oceanic side; August 22, 1952; J. P. E. Morrison; Loc. 2167: 3 spec.

aaa. Southeast point of Opakea Island, Raroia Atoll, Tuamotu Islands; under rocks on sandy bottom below low tide line, lagoon shore; August 26, 1952; J. P. E. Morrison; Loc. 2194: 1 spec.

bbb. Southwest corner of Opakea Island, Raroia Atoll, Tuamotu Islands; channel and lagoon shore; August 27, 1952; J. P. E. Morrison; Loc. 2198: 1 spec.

ccc. North of Opakea Island, Raroia Atoll, Tuamotu Islands; outer reef pavement in channel just to the north of the island; August 27, 1952; J. P. E. Morrison; Loc. 2205: 1 spec.

Coenobita rugosus H. Milne Edwards

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-171: 16 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-658: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-660: 12 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-4: 16 spec.
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-6: 7 spec.
f. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-124: 1 spec.
g. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-403: 3 spec.
h. Onotoa, Gilbert Islands; Pacific Science Board camp area; July 30, 1951; P. E. Cloud: 53 spec.
i. Torrutj Island, Kwajalein Atoll, Marshall Islands; 1951-1952; F. S. MacNeil; Loc. 900: 3 juv.
j. Lato Island, Likiep Atoll, Marshall Islands; in beach drift well above high tide mark; December 12-15, 1951; F. R. Fosberg; Loc. 2: 1 juv.
k. Rua Island, Ujae Atoll, Marshall Islands; under rotting coconut logs; February 23, 1952; F. R. Fosberg; Loc. 3: 4 juv.
l. Allo Island, Ujae Atoll, Marshall Islands; around freshly cut coconuts and in and around rotten coconut log in daytime; March 10, 1952; F. R. Fosberg; Loc. 12-15: 97 spec.
m. Wotho Island, Wotho Atoll, Marshall Islands; small hermit crab, claws not striped, darker color, large claw purple; attracted to open nuts near camp; February 14, 15, 1952; F. R. Fosberg; Loc. 31: 9 juv.
n. Ujelang Islet, Ujelang Atoll, Marshall Islands; on ground; February 6,7, 1952; F. R. Fosberg; Loc. 43: 3 juv.
o. Ujelang Island, Ujelang Atoll, Marshall Islands; on ground; February 6, 7, 1952; F. R. Fosberg; Loc. 44: 2 juv.
p. Jemo Island, Marshall Islands; at top of beach; December 18-22, 1951; F. R. Fosberg; Loc. 68: 2 juv.
q. Kwajalein Island, Kwajalein Atoll, Marshall Islands; above beach, around backdoor of officer's club; March 13, 1952; F. R. Fosberg; Loc. 80: 6 juv.
r. Enobuoj Island, Kwajalein Atoll, Marshall Islands; around a sack of rotting copra thrown up on the beach; January 19, 1952; F. R. Fosberg; Loc. 81: 1 juv.
s. Lae Island, Lae Atoll, Marshall Islands; on trail in front of camp at night, large specimen in Vasum shell, small specimen in Cerithium shell; January 6-10, 1952; F. R. Fosberg; Loc. 90: 2 spec.
t. Lojjaiong Island, Kwajalein Atoll, Marshall Islands; in interstices in cut bank of small pebbles above high tide level; January 15, 1952; F. R. Fosberg; Loc. 665: 1 juv.

u. Bikar Island, Bikar Atoll, Marshall Islands; 5 ft. up a coconut tree trunk; August 6, 1952; F. R. Fosberg; Loc. 1075: 1 spec.
v. Bikar Island, Bikar Atoll, Marshall Islands; above high tide level on sand at night; August 6, 1952; F. R. Fosberg; Loc. 1077: 1 spec.
w. Mataira Island, Raroia Atoll, Tuamotu Islands; purple clawed land hermit crabs feeding at night on opened green coconuts (juice); July 16, 1952; J. P. E. Morrison; Loc. 1940: 1 spec. (among specimens of C. brevimanus).

Coenobita spinosus H. Milne Edwards
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-420: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-440: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-661: 1 spec.
d. Bock Island, Ujae Atoll, Marshall Islands; in coconut shell, from Pisonia forest; February 20, 1952; F. R. Fosberg; Loc. 8: 1 spec.
e. Wotho Island, Wotho Atoll, Marshall Islands; in coconut trash; February 14, 15, 1952; F. R. Fosberg; Loc. 30: 2 spec.

Family Paguridae
Subfamily Dardaninae

Aniculus aniculus (Herbst)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-443: 3 spec.
b. Arno Atoll, Marshall Islands; 1950 R. W. Hiatt; Loc. E 2-498: 1 spec.
c. Nado Island, Likiep Atoll, Marshall Islands; in Turbo shells, Lithothamnion ridge, east side of island; December 14, 1951; F. S. MacNeil; Loc. 821: 2 spec.
d. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; inshore pool area of outer reef; N. end of island; July 9, 1952; J. P. E. Morrison; Loc. 1906: 2 spec.
e. Homohomo Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 21, 1952; J. P. E. Morrison; Loc. 1956: 1 spec.
f. Tahunariri Island, Raroia Atoll, Tuamotu Islands; windward outer reef edge; July 27, 1952; J. P. E. Morrison; Loc. 1999: 1 spec.
g. Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef edge; August 4, 1952; J. P. E. Morrison; Loc. 2039: 1 spec.

Calcinus elegans (H. Milne Edwards)
a. Onotoa, Gilbert Islands; back ridge trough, about 600 ft. offshore from Pacific Science Board Camp, at the outer margin of the windward reef, just inshore from the algal ridge and surge channels. This part of the reef never dries even at low tide and generally has at least a foot or two of water above it; August 1, 1951; P. E. Cloud; Loc. GOC-32: 1 spec. (identification not certain).
b. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; median section or zone of outer reef, opposite village; July 5, 1952; J. P. E. Morrison; Loc. 1836: 2 spec.

c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; near edge of outer reef, opposite village; July 6, 1952; J. P. E. Morrison; Loc. 1852: 2 spec. in Turbo argyrostomus.
d. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; middle to inner zone of outer reef flats opposite village; July 6, 1952; J. P. E. Morrison; Loc. 1863, 1864: 5 spec.
e. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 8, 1952; J. P. E. Morrison; Loc. 1885, 1886: 2 spec.
f. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef along Lithothamnion ridge; July 9, 1952; J. P. E. Morrison; Loc. 1893: 3 spec.
g. Northeast side of Tepukamaruia Island, Takume Atoll, Tuamotu Islands; oceanic reef; September 8, 1952; J. P. E. Morrison; Loc. 2275: 1 spec.
h. Tepukamaruia Island, Takume Atoll, Tuamotu Islands; oceanic reef flats; September 8, 1952; J. P. E. Morrison; Loc. 2276: 1 spec.
i. Homohomo Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 21, 1952; J. P. E. Morrison; Loc. 1956: 4 spec.
j. Homohomo Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 21, 1952; J. P. E. Morrison; Loc. 1958: 1 spec.
k. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; shore line, rock and gravel at low tide line or below, at night; July 23, 1952; J. P. E. Morrison; Loc. 1976: 2 spec.
l. Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef pavement area or zone near shore at night; August 4, 1952; J. P. E. Morrison; Loc. 2040: 3 spec.
m. Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef flats; August 5, 1952; J. P. E. Morrison; Loc. 2048: 1 spec.
n. Tepatahiti Island, Raroia Atoll, Tuamotu Islands; outer reef flats, here the pavement and pool zone extends almost from the shore to the outer reef edge, the boring urchin zone, however, is distinct, as is the very narrow Lithothamnion ridge; August 26, 1952; J. P. E. Morrison; Loc. 2180: 3 spec.
o. Ngavarivari Island, Raroia Atoll, Tuamotu Islands; outer reef ridge; August 26, 1952; J. P. E. Morrison; Loc. 2221: 2 spec.
p. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; pool and pavement zone near shore; September 3, 1952; J. P. E. Morrison; Loc. 2253: 1 spec.
q. Tenuku Haupapatea Island, Raroia Atoll, Tuamotu Islands; algae zone just behind outer reef edge, outer reef flats; September 5, 1952; J. P. E. Morrison; Loc. 2269: 1 spec.

Calcinus gaimardi (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-297: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; May 6 and 13, 1949; P. E. Cloud; Loc. D-5: 2 spec.
c. Onotoa, Gilbert Islands; back ridge trough, about 600 ft. offshore from Pacific Science Board camp, at the outer margin of the windward reef, just inshore from the algal ridge and surge channels. This part of the reef never dries even at low tide and generally has at least a foot or two of water above it; August 1, 1951; P. E. Cloud; Loc. GOC-32: 3 spec.

Calcinus laevimanus Randall

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-51: 7 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-592: 2 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. 2-304: 12 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-325: 1 spec. (identification not certain).
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-511: 2 spec.
f. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 1 spec.
g. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-2: 10 spec.
h. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 3 spec.
i. Onotoa, Gilbert Islands; July 25, 1951; A. H. Banner; Loc. A-5: 2 spec.
j. Onotoa, Gilbert Islands; August 9, 1951; A. H. Banner; Loc. B-3: 2 spec.
k. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 4 spec.
l. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner: 40 spec.
m. Ailuk Island, Ailuk Atoll, Marshall Islands; seaward reef; 1951-1952; F. S. MacNeil; Loc. 857: 3 spec.
n. Bock Island, Ujae Atoll, Marshall Islands; 1952; F. S. MacNeil; Loc. 921: 2 spec.
o. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; seaward side opposite the village; July 1, 1952; J. P. E. Morrison; Loc. 1829: 1 spec.
p. South edge of Motufano Island, Raroia Atoll, Tuamotu Islands; residual pools at low tide in incomplete channel near lagoon, incompletely connected to lagoon water; August 8, 1952; J. P. E. Morrison; Loc. 2086: 2 spec.
q. Northeast side of Tepukamaruia Island, Takume Atoll, Tuamotu Islands; oceanic reef; September 8, 1952; J. P. E. Morrison; Loc. 2275: 1 spec.
r. Northeast side of Tepukamaruia Island, Takume Atoll, Tuamotu Islands; oceanic beach; September 8, 1952; J. P. E. Morrison; Loc. 2277: 3 spec.
s. Mataira Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 16, 1952; J. P. E. Morrison; Loc. 1941: 2 spec.
t. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; shore line, rock and gravel at low tide line or below, at night; July 23, 1952; J. P. E. Morrison; Loc. 1976: 1 spec.
u. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; on and under rocks at and below low tide line, gravel flats on inner reef, lagoon shore; August 7, 1952; J. P. E. Morrison; Loc. 2076: 1 spec.
v. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; pavement pool habitat, outer reef near shore opposite village; August 23, 1952; J. P. E. Morrison; Loc. 2178: 31 spec.

w. Puka Puka Island, Raroia Atoll, Tuamotu Islands; under rocks and on pavement of pool zone of outer reef flats; August 28, 1952; J. P. E. Morrison; Loc. 2208: 5 spec.
x. Ngavarivari Island, Raroia Atoll, Tuamotu Islands; outer reef flat; August 26, 1952; J. P. E. Morrison; Loc. 2218: 3 spec.
y. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from under larger rocks mostly on inner (shore) half of inner reef flats; September 2, 1952; J. P. E. Morrison; Loc. 2243: 2 spec.

Calcinus latens (Randall)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-108: 5 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-153: 3 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-297: 3 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-304: 3 spec.
e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-391: 5 spec.
f. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-705: 1 spec.
g. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 8 spec.
h. Onotoa, Gilbert Islands; August 15, 1951; A. H. Banner; Loc. B-8: 4 spec.
(Arno identifications not entirely certain)
i. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef and drift; August 8, 1952; J. P. E. Morrison; Loc. 2093: 1 spec.
j. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; pavement pool habitat nearby outer reef near shore opposite village; August 23, 1952; J. P. E. Morrison; Loc. 2178: 1 spec.
k. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from under larger rocks mostly on inner (shore) half of inner reef flats; September 2, 1952; J. P. E. Morrison; Loc. 2243: 23 spec.

Calcinus seurati Forest
a. Bock Island, Ujae Atoll, Marshall Islands; 1952; F. S. MacNeil; Loc. 921: 2 spec.
b. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; median section or zone of outer reef flats a little behind outer reef edge opposite village; July 5, 1952; J. P. E. Morrison; Loc. 1836: 1 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef flat; July 8, 1952; J. P. E. Morrison; Loc. 1885: 1 spec.
d. Lagoon side of Otikaheru Island, Raroia Atoll, Tuamotu Islands; near shore of brackish enclosed lagoon, on the lagoon side of island; July 29, 1952; J. P. E. Morrison; Loc. 2015: 4 spec.
e. South edge of Motufano Island, Raroia Atoll, Tuamotu Islands; residual pools at low tide in incomplete channel near lagoon, incompletely connected to lagoon water; August 8, 1952; J. P. E. Morrison; Loc. 2086: 25 spec.

f. Northeast side of Tepukamaruia Island, Takume Atoll, Tuamotu Islands; oceanic reef; September 8, 1952; J. P. E. Morrison; Loc. 2275: 1 spec.

g. Northeast side of Tepukamaruia Island; Takume Atoll, Tuamotu Island; large "tide" pool (of reduced salt?) far back next to shore (150 yds.) line of beach rock and/or sand; September 8, 1952; J. P. E. Morrison; Loc. 2278: 11 spec.

h. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; pavement pool habitat nearby outer reef near shore opposite village; August 23, 1952; J. P. E. Morrison; Loc. 2178: 1 spec.

i. Opakea Island, Raroia Atoll, Tuamotu Islands; outer reef pavement habitat in channel just to the North of the island; August 27, 1952; J. P. E. Morrison; Loc. 2205: 1 spec.

j. Puka Puka Island, Raroia Atoll, Tuamotu Islands; under rocks and on pavement of pool zone of outer reef flats; August 28, 1952; J. P. E. Morrison; Loc. 2208: 5 spec.

k. Ngavarivari Island, Raroia Atoll, Tuamotu Islands; outer reef flat; August 26, 1952; J. P. E. Morrison; Loc. 2218: 1 spec.

Calcinus spicatus Forest ?

a. Onotoa, Gilbert Islands; about 9200 ft. S. 72° W. from offshore end of Government Station jetty (on S. portion of northern main island) just S. of main passage out of lagoon (Rawa ni Karoro) where coral shoals known as Aon te ra Bata begin to deepen; collected in area where patch reefs rise above the limesand bottom at 16 ft. depth; July 29, 1951; P. E. Cloud; Loc. GOC-27: 1 spec.

Calcinus spec.

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-516: 3 spec.

b. Onotoa, Gilbert Islands; August 24, 1951; A. H. Banner; Loc. A-XVI: 1 spec.

c. Onotoa, Gilbert Islands; back ridge trough, about 600 ft. offshore from Pacific Science Board camp, at outer margin of windward reef, just inshore from the algal ridge and surge channels. This part of the reef never dries even at low tide and generally has at least a foot or two of water above it; August 1, 1951; P. E. Cloud; Loc. GOC-32: 1 spec.

Diogenes spec.

a. Onotoa, Gilbert Islands; in coral; August 9, 1951; A. H. Banner; Loc. B-5: 1 spec.

Clibanarius corallinus (H. Milne Edwards)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-51: 1 spec.

b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-108: 6 spec.

c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-153: 1 spec.

d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-592: 16 spec.

e. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-4: 1 spec.
f. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-124: 2 spec.
g. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-180: 1 spec.
h. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-304: 3 spec.
i. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-325: 1 spec.
j. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-367: 1 spec.
k. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner: 1 spec.
l. Onotoa, Gilbert Islands; ocean reef; August 4, 1951; A. H. Banner: 1 spec.
m. Onotoa, Gilbert Islands; outer reef flat, from Trochus shell; July 26, 1951; A. H. Banner: 1 spec. (color: black).
n. Onotoa, Gilbert Islands; July 5, 1951; A. H. Banner; Loc. B-3: 2 spec.
o. Onotoa, Gilbert Islands; August 10, 1951; A. H. Banner; Loc. B-6: 1 spec.
p. Ailuk Island, Ailuk Atoll, Marshall Islands; seaward reef; 1951-1952; F. S. MacNeil; Loc. 857: 5 spec.
q. Bock Island, Ujae Atoll, Marshall Islands; 1952; F. S. MacNeil; Loc. 921: 3 spec.
r. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; intertidal gravel flats in incomplete channel; July 21, 1952; J. P. E. Morrison; Loc. 1964: 3 spec.
s. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; shore line, rock and gravel at low tide line or below, at night; July 23, 1952; J. P. E. Morrison; Loc. 1976: 1 spec.
t. North end Oneroa Island, Raroia Atoll, Tuamotu Islands; outer reef and drift; August 8, 1952; J. P. E. Morrison; Loc. 2093: 1 spec.
u. Ngavarivari Island, Raroia Atoll, Tuamotu Islands; at and just above the high tide line of blackened coral gravel and rocks; August 26, 1952; J. P. E. Morrison; Loc. 2222: 1 spec.

Clibanarius eurysternus Hilgendorf
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-304: 3 spec.
b. Onotoa, Gilbert Islands; July 25, 1951; A. H. Banner; Loc. A-5: 1 spec.

Clibanarius humilis Dana
a. Onotoa, Gilbert Islands; July 12, 1951; A. H. Banner; Loc. A-1: 6 spec.
b. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-2: 18 spec.
c. Onotoa, Gilbert Islands; July 11, 1951; A. H. Banner; Loc. A-4: 1 spec.

d. Onotoa, Gilbert Islands; July 25, 1951; A. H. Banner; Loc. A-5: 1 spec. (from Mitra shell).
e. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 1 spec.
f. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner: 24 spec.

Clibanarius sp.
a. Lagoon west of Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. C-7a: 2 spec.

Dardanus deformis (H. Milne Edwards)
a. Ailuk Island, Ailuk Atoll, Marshall Islands; from inner rubble flat on seaward reef at night; December 24, 1951; F. R. Fosberg; Loc. 835: 1 spec.
b. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from sandy stretches between rocks etc., inner reef flats, up to 3 ft. below low tide, collected at night at pier at village; July 5, 1952; J. P. E. Morrison; Loc. 1851: 1 spec.
c. "Les Tropiques," 2 km. W. of Papeete, Tahiti, Society Islands; muddy sand bottom from shallow water near shore, only 3 to 6 inches of water at low tide; collected at night; inner fringing reef flats; September 13, 1952; J. P. E. Morrison; Loc. 2286: 5 spec.
d. "Les Tropiques," 2 km. W. of Papeete, Tahiti, Society Islands; sea anemone carrying hermit crabs (white eyed with the flash-light, and fast moving) from inner (fringing) reef flats near shore, 1 ft. or less of water, at night; September 13, 1952; J. P. E. Morrison; Loc. 2287: 2 spec.

Dardanus euopsis (Dana)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-16: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-340: 2 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-506: 1 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-510: 1 spec.
e. Onotoa, Gilbert Islands; July-August, 1951; A. H. Banner: 1 spec.
f. Onotoa, Gilbert Islands; August 1, 1951; A. H. Banner; Loc. A-8: 1 spec. (identity not certain).
g. Onotoa, Gilbert Islands; about 4 1/2 miles S. 86° W. from Aiaki Maneaba on the lagoon side of the broad reef passage N. of a narrower passage called Rawa Bao, from small patch reefs rising to within 4-6 ft. of the surface from a limesand and coral gravel bottom at 2 fathoms; July 27, 1951; P. E. Cloud; Loc. GOC-25: 1 spec. (from Trochus).
h. Onotoa, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon. Patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 spec.

i. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef, near center of atoll. Collected from 1/2 mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 2 spec.

j. Onotoa, Gilbert Islands; about 3¼ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8-10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec.

Dardanus fabimanus (Dana)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-398: 1 spec.

b. Onotoa, Gilbert Islands; outer reef flat; from Terebra shell; July 26, 1951; A. H. Banner; Loc. B-1b: 3 spec. (sandy color).

c. Onotoa, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 1 juv.

Dardanus gemmatus (H. Milne Edwards)

a. Onotoa, Gilbert Islands; SE. end of Rakai Ati reef area, S. side of big windward point of reef near center of atoll; from 1/2 mile strip across the reef; August 20, 1951; P. E. Cloud; Loc. GOC-36: 1 spec.

Dardanus guttatus (Olivier)

a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-391: 1 spec.

b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-304: 1 spec.

c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-367: 1 spec.

d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-454: 1 spec.

e. Onotoa, Gilbert Islands; about 4⅛ miles S. 86° W. from Aiaki Maneaba on the lagoon side of the broad reef passage N. of a narrower passage called Rawa Bao; from small patch reefs rising to within 4-6 ft. of the surface from a limesand and coral gravel bottom at 2 fathoms; July 27, 1951; P. E. Cloud; Loc. GOC-25: 1 spec. (from Lambis chiragra).

f. Onotoa, Gilbert Islands; about 3½ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 ft. (sounded at low tide) of water to within about 8-10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec.

g. Between Taka and Lojiron Islands, Taka Atoll, Marshall Islands; on reef in several feet of water, inhabiting a large heavy Lambis shell; December 7, 1951; F. R. Fosberg; Loc. 55: 1 spec.

Dardanus megistos (Herbst)
a. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; large red hermit crabs from below low tide on lagoon side near pier at village, collected at night; July 5, 1952; J. P. E. Morrison; Loc. 1848: 2 spec.
b. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; on and under coralline rocks on gravel flats just below low tide line of inner reef (lagoon) shore, at night; August 6, 1952; J. P. E. Morrison; Loc. 2072: 1 spec.

Dardanus spinimanus (H. Milne Edwards)
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-325: 1 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-339: 1 spec.

Dardanus sp. (near crassimanus [H. Milne Edwards])
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-506: 1 spec.

Subfamily Pagurinae

Pagurus laevimanus (Ortmann)
a. Saipan, Marianas Islands; January 30, 1949; P. E. Cloud: 1 spec.
b. Saipan, Marianas Islands; taken from dead coral and algal rock at about 10 ft.; April 6, 1949; P. E. Cloud; Loc. A-8: 1 spec.
c. Lagoon west of Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. C-7a: 2 spec.

GALATHEIDEA

(Only Partly Identified)

Family Galatheidae

Galathea elegans Adams & White
a. Kwadak Island, Kwajalein Atoll, Marshall Islands; on Comanthus bennetti (J. Muller), in 3-4 fathoms of water; July 7, 1951; P. E. Cloud: 2 spec. (Crinoid identified by Mr. Austin H. Clark).

Family Porcellanidae

Neopetrolisthes ohshimai Miyake
a. Ine village, Arno Atoll, Marshall Islands; outer sea reef slope; commensal with giant sea anemone, Disocosoma; June-September, 1950; R. W. Hiatt; Loc. E 1-673: 1 spec.

III. Macrura

SCYLLARIDEA

Family Scyllaridae

Parribacus antarcticus (Lund)

a. North of Ine village, Arno Atoll, Marshall Islands; lagoon reef flat; June-August 1950; J. W. Wells; Loc. S. 20: 1 spec.
b. Onotoa Atoll, Gilbert Islands; windward sea reef; July 1951; A. H. Banner; Loc. A-4: 1 juv.
c. Onotoa Atoll, Gilbert Islands; windward sea reef; August 2, 1951; A. H. Banner; Loc. A-8: 1 juv.
d. Onotoa Atoll, Gilbert Islands; August 7, 1951; P. E. Cloud: 1 spec.
e. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef, fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1972: 2 spec.
f. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; near edge of outer reef a little behind the Lithothamnion ridge; fishing at night; July 23, 1952; J. P. E. Morrison; Loc. 1979-1983: 2 spec.

Family Palinuridae

Panulirus versicolor (Latreille)

a. Onotoa Atoll, Gilbert Islands; July-September 1951; A. H. Banner: 1 spec.
b. Ine village, Arno Atoll, Marshall Islands; from under coral head, outer lagoon reef slope; June-September 1950; R. W. Hiatt; Loc. E 2-455: 1 spec.

Panulirus penicillatus (Olivier)

a. Ine village, Arno Atoll, Marshall Islands; from under coral head, outer lagoon reef slope; June-September 1950; R. W. Hiatt; Loc. E 2-455.
b. Onotoa Atoll, Gilbert Islands; July-September 1951; A. H. Banner: 2 spec.
c. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef; fishing at night; July 22, 1952; J. P. E. Morrison; Loc. 1974: 1 spec.
d. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; near edge of outer reef, a little behind Lithothamnion ridge; fishing at night; July 23, 1952; J. P. E. Morrison; Loc. 1983: 1 spec.
e. Oneroa Island, Raroia Atoll, Tuamotu Islands; under coral on outer reef behind reef edge in coral and pool area; at night; August 5, 1952: 1 ovig. female.

THALASSINIDEA

Family Axiidae

Axius (Neaxius) acanthus A. Milne Edwards
a. Lagoon west of Susupe, Saipan, Marianas Islands; April 24, 1949; P. E. Cloud; Loc. G-1: 2 spec.

Axiopsis (Axiopsis) serratifrons (A. Milne Edwards)
a. Onotoa, Gilbert Islands; August 2, 1951; A. H. Banner; Loc. A-9: 2 spec.
b. Onotoa, Gilbert Islands; Heliopora tidepool in sand at S. end of the northern main island at 1 ft. low tide; August 2, 1951; P. E. Cloud; Loc. GOC-30: 1 ovig. female.

Axiopsis (Paraxiopsis) bisquamosa De Mann
a. Lagoon west of Saipan; Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 2 spec.

Family Callianassidae

Upogebia amboinensis (De Man)
a. Onotoa, Gilbert Islands; about 13,400 ft. S. 75° W. from Aiaki Maneaba in the deep central part of the lagoon. Bottom of low scattered dead and living coral patches on intervening lime mud and lime sand about 30-40% seds, 60-70% coral; August 25, 1951; P. E. Cloud; Loc. GOC-55: 9 spec.

Callianassa (Trypaea) gravieri Nobili
a. Onotoa, Gilbert Islands; tide flat area south of Aonteuma; August 21, 1951; A. H. Banner: 1 ovig. female.
b. Onotoa, Gilbert Islands; clean lime sand flat in the vicinity of a point about 3000 ft. E. of Aonteuma, NW. Onotoa; area exposed at midtide; August 21, 1951; P. E. Cloud; GOC-42: 1 ovig. female.

Callianidea elongata (Guérin)
a. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec.

PENAEIDEA

Family Penaeidae

Metapenaeopsis sp.
a. Arno Atoll, Marshall Islands; June-September 1950; R. W. Hiatt; Loc. E 2-275: 1 juv.

CARIDEA

Family Pasiphaeidae

Leptochela robusta Stimpson
a. Two hundred feet outside Ujae Atoll, Marshall Islands; skimmed from the surface of the sea at the stem of the ship under lights; 1951-1952; F. S. MacNeil; Loc. 922: 11 spec.

Family Disciadidae

Discias musicus new species
a. Lagoon west of Saipan, Marianas Islands; immediately shoreward of barrier reef flat; April 10, 1949: P. E. Cloud; Loc. C-7a: 1 spec.

Family Processidae

Nikoides sibogae De Man
a. Lagoon west of Saipan, Marianas Islands; immediately shoreward of barrier reef flat; P. E. Cloud; April 10, 1949; Loc. C-7a: 1 spec.

Nikoides nanus Chace
a. Lagoon west of Saipan, Marianas Islands; seaward side of reef, bottom with abundant patches and knolls of mostly dead coral, crustose corallines, and coralline or coral rubble, with areas of coral algal concentration; depths 10-60 ft, with local coral algal shoals; May 4, 1949; P. E. Cloud; Loc. E-7: 1 ovig. female.
b. Lagoon west of Saipan, Marianas Islands; entrance of lagoon, bottom of limesand with fairly abundantly scattered knolls and patches of mostly dead coral and/or crustose corallines; depth generally exceeding 20 ft; May 13, 1949; P. E. Cloud; Loc. D-7: 1 spec.

Family Thalassocaridae

Thalassocaris crinita (Dana)
a. Southeast part of main lagoon, Arno Atoll, Marshall Islands; haul No. 3; 20 fms. deep; July 22, 1950; John W. Wells; Loc. 39: 3 spec.

Family Hippolytidae

Saron marmoratus (Olivier)
a. Matuis Beach, NW. Saipan, Marianas Islands; taken mostly from clumps of brown Acropora and partly from Pocillopora damicornis cespitosa; December 1, 1948; P. E. Cloud: 1 spec.

b. Lagoon west of Saipan, Marianas Islands; immediately shoreward of barrier reef flat; May 13, 1949; P. E. Cloud; Loc. C-7a: 1 spec.
c. Ine village, Arno Atoll, Marshall Islands; from head of Acropora spec. about midway between the shore and the sea reef edge; June-September 1950; R. W. Hiatt; Loc. E 1-288: 1 spec.
d. Onotoa Atoll, Gilbert Islands; toward S. end of a lee reef stretch known as Rakai Ati, in an area of small coral patches fairly thickly interspersed on limesand and coral debris; depth at low tide 3-4 ft.; July 26, 1951; P. E. Cloud; GOC-24: 1 spec.

Saron neglectus De Man

a. Lagoon west of Saipan, Marianas Islands; immediately shoreward of barrier reef flat; May 13, 1949; P. E. Cloud; Loc. C-7a: 2 spec.
b. Ine village, Arno Atoll, Marshall Islands; from head of Acropora spec.; about midway between the shore and the sea reef edge; June-September 1950; R. W. Hiatt; Loc. E 1-288: 1 ovig. female.
c. Ine village, Arno Atoll, Marshall Islands; from head of Pocillopora spec. near outer edge of sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-624: 2 spec.
d. Ine village, Arno Atoll, Marshall Islands; from head of Acropora spec. near outer edge of lagoon reef; June-September 1950; R. W. Hiatt; Loc. E 2-375: 1 spec.
e. Onotoa Atoll, Gilbert Islands; toward S. end of a lee reef stretch known as Rakai Ati, in an area of small coral patches fairly thickly interspersed on limesand and coral debris; depth at low tide 3-4 ft.; July 26, 1951; P. E. Cloud; Loc. GOC-24: 1 spec.
f. Onotoa Atoll, Gilbert Islands; about 9200 ft. S. 72° W. from offshore end of Government Station jetty (on S. portion of northern main island) just S. of main passage out of lagoon (Rawa ni Karoro) where coral shoals known as Aon te ra Bata begin to deepen; collected from area where patch reefs rise above the limesand bottom at 16 ft. depth; July 29, 1951; P. E. Cloud; Loc. GOC-27: 1 spec.
g. Onotoa Atoll, Gilbert Islands; about 3¼ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass on the S. part of the leeward reef; collected from thickly set coral masses rising 15 ft. (sounded at low tide) of water to within about 8-10 ft. of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 spec.

Thor maldivensis Borradaile

a. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 2 spec.

b. Onotoa Atoll, Gilbert Islands; about 3½ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 feet (sounded at low tide) of water to within about 8-10 feet of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 3 spec.

Thor paschalis (Heller)

a. Lagoon west of Saipan, Marianas Islands; entrance of lagoon, bottom of abundant patches and knolls of mostly dead coral, crustose corallines, and coralline and coral rubble, with areas floored by limesand around, between and locally on the areas of coral-algal concentration; depth generally exceeds 30 feet; 1949; P. E. Cloud; Loc. D-8: 1 ovig. female.
b. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a; immediately shoreward of barrier reef flat: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 ovig. female.

Family Rhynchocinetidae

Rhynchocinetes hiatti new sp.

a. Onotoa Atoll, Gilbert Islands; August 1951; A. H. Banner: 3 spec.
b. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; from surge channels in outer reef, at and beyond Lithothamnion ridge; August 6, 1952; J. P. E. Morrison; Loc. 2064: 14 spec.

Family Palaemonidae

Subfamily Palaemoninae

Palaemon debilis Dana

a. Tehakapikipiki Island, Raroia Atoll, Tuamotu Islands; brackish enclosed lagoon, in area little below low tide line, in about 1-2 feet of water, sandy bottom around rocks and coralline gravel; July 29, 1952; J. P. E. Morrison; Loc. 2013: about 2500 spec.
b. South side of Oteteu Island, Raroia Atoll, Tuamotu Islands; just above silty sand bottom, lagoon end of incomplete channel (plugged up with sand bar); in daytime; August 21, 1952; J. P. E. Morrison; Loc. 2162: 69 spec.

Palaemon concinnus Dana

a. Harrison Smith's Place, Maitaica District, Tahiti, Society Islands; estuarine tree swamp (Tahitian Chestnut?), black mud bottom; June 21, 1952; J. P. E. Morrison; Loc. 1813: 92 spec.

Macrobrachium aemulum (Nobili)

a. Punaruu River, 14 km. W. of Papeete, Tahiti, Society Islands; in the rapids just above the road bridge; low water after several days without rain (dry season), June 14, 1952; J. P. E. Morrison; Loc. 1809: 1 spec.

Macrobrachium australe (Guérin)

a. Vaipoopo River, about 12 km. E. of Papeete, Tahiti, Society Islands; in quiet margin of the river; September 15, 1952; J. P. E. Morrison; Loc. 2297: 1 spec.

Macrobrachium lar (Fabricius)

a. Talofofo River, 3950 feet due west of Unai Talofofo, Saipan, Marianas Islands; in small pools in the stream-bed of the river; 1949; P. E. Cloud: 10 spec.

Brachycarpus biunguiculatus (Lucas)

a. North end of Oneroa Island, Raroia Atoll, Tuamotu Islands; from surge channels at and beyond Lithothamnion ridge; August 6, 1952; J. P. E. Morrison; Loc. 2063: 1 spec.

Subfamily Pontoniinae

Palaemonella tenuipes Dana

a. Ine village, Arno Atoll, Marshall Islands; from Acropora heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E1-288: 2 spec.
b. Ine village, Arno Atoll, Marshall Islands; from coral heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-388: 1 spec.
c. Ine village, Arno Atoll, Marshall Islands; from coral heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-307: 3 spec.

Palaemonella vestigialis Kemp

a. Lagoon west of Saipan, Marianas Islands; immediately shoreward of barrier reef flat; April 10, 1949; P. E. Cloud; Loc. C-7a: 1 ovig. female.

Palaemonella denticulata (Nobili)

a. Ine village, Arno Atoll, Marshall Islands; from Acropora heads in lagoon reef; June-September 1950; R. W. Hiatt; Loc. E 2-375: 2 spec.
b. Oneroa Island, Raroia Atoll, Tuamotu Islands; about 3/4 mile inside lagoon; sand film over rock pavement and coral patches on bottom; 40 ft. of water; dredge; August 9, 1952; J. P. E. Morrison; Loc. 2100: 5 spec.

Vir orientalis (Dana)

a. Lagoon west of Saipan, Marianas Islands; from coral heads in 4-6 ft. of water; April 7, 1949; P. E. Cloud; Loc. A-11: 1 ovig. female.
b. Off Unai Dikiki Matuis, NW. Saipan, Marianas Islands; near reef off Naval Magazine; collected from coral; April 20, 1949; Mrs. Alice Davis: 1 ovig. female.

Periclimenes (Harpilius) elegans (Paulson)

a. Ine village, Arno Atoll, Marshall Islands; inner region of sea reef flat; from branches of dead coral head; June-September 1950; R. W. Hiatt; Loc. E 1-139: 1 spec.

Periclimenes (Harpilius) spiniferus De Man

a. Matuis Beach, NW. Saipan, Marianas Islands; December 1, 1948; P. E. Cloud: 8 spec.
b. Lagoon west of Saipan, Marianas Islands; from coral heads in 4-6 ft. of water; April 7, 1949; P. E. Cloud; Loc. A-11: 1 ovig. female.
c. Saipan, Marianas; from a single large head of Acropora leptocyathus (Brook); July 2, 1949; P. E. Cloud: 1 spec.
d. Ine village, Arno Atoll, Marshall Islands; from coral heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-388: 1 spec.
e. Ine village, Arno Atoll, Marshall Islands; from Seriatopora heads on lagoon reef; June-September 1950; R. W. Hiatt; Loc. E 2-350: 6 spec.

Periclimenes (Harpilius) bayeri n. sp.

a. Ine village, Arno Atoll, Marshall Islands; sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-207: 1 spec.
b. Ine village, Arno Atoll, Marshall Islands; outer edge of sea reef; from head of Pocillopora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-634: 1 spec.

Paranchistus biunguiculatus (Borradaile)

a. Lagoon, Onotoa Atoll, Gilbert Islands; in Tridacna gigas (L.); July 16, 1951; P. E. Cloud: 1 spec.
b. Lagoon, Ujae Atoll, Marshall Islands; from the inside of a large live Tridacna; 1951-1952; F. S. MacNeil; Loc. 923: 1 ovig. female.

Anchistus miersi (De Man)

a. Ine village, Arno Atoll, Marshall Islands; lagoon reef; commensal with the giant clam Hippopus hippopus (L.); June-September 1950; R. W. Hiatt; Loc. E 1-125: 2 spec.
b. Ine village, Arno Atoll, Marshall Islands; lagoon reef; commensal with the giant clam Hippopus hippopus (L.); June-September 1950; R. W. Hiatt; Loc. E 2-9: 1 ovig. female.

Anchistus demani Kemp

a. Ine anchorage, Arno Atoll, Marshall Islands; reef flat, coral rock; July-August 1950; J. W. Wells; Loc. 6: 1 ovig. female.

Periclimenaeus quadridentatus (Rathbun)

a. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds NNE. of Mañagaha Island: 1 ovig. female.
b. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7a, immediately shoreward of barrier reef flat: 3 spec.

Periclimenaeus tridentatus (Miers)

a. Rinai Finauchutugan, Saipan, Marianas Islands; January 30, 1949; P. E. Cloud: 1 spec.

Onycocaris stenolepis Holthuis

a. Ine village, Arno Atoll, Marshall Islands; from coral heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-307: 1 ovig. female.

Philarius gerlachei (Nobili)

a. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef, on Acropora heads; June-September 1950; R. W. Hiatt; Loc. E 1-613: 2 spec.

b. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef, from coral heads; June-September 1950; R. W. Hiatt; Loc. E 1-388: 4 spec.

c. Onotoa Atoll, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above the limesand surface at 14 ft. to within 6 ft. of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 2 spec.

Philarius imperialis (Kubo)

a. Ine village, Arno Atoll, Marshall Islands; near outer edge of lagoon reef; from Acropora heads; June-September 1950; R. W. Hiatt; Loc. E 2-375: 3 spec.

Pontoniopsis comanthi Borradaile

a. Lagoon west of Saipan, Marianas Islands; April 10, 1949; P. E. Cloud; Loc. C-7; barrier reef flat; from Comatulid Crinoid: 1 ovig. female.

b. Onotoa Atoll, Gilbert Islands; about 4¼ miles S. 86° W. from Aiaki Maneaba on the lagoon side of the broad reef passage N. of a narrower passage called Nawa Bao; from small patch reefs rising to within 4-6 ft. of the surface from a limesand and coral gravel bottom at 2 fms.; on Crinoids; July 27, 1951; P. E. Cloud; Loc. GOC-25: 1 ovig. female.

Pontonia hurii n. sp.

a. Arno Atoll, Marshall Islands; from mantle cavity of rock clam, Spondylus sp.; June-September 1950; R. W. Hiatt; Loc. E 2-389: 1 ovig. female.

b. Tepatahiti Island, Raroia Atoll, Tuamotu Islands; off patch reef in lagoon opposite island; 25-30 ft. water; from Spondylus sp.; August 27, 1952; J. P. E. Morrison; Loc. 2227: 8 spec.

Harpiliopsis beaupresi (Audouin)

a. Ine village, Arno Atoll, Marshall Islands; from coral heads on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-307 and E 1-388: 7 spec.

b. Ine village, Arno Atoll, Marshall Islands; Pocillopora sp. on sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-618: 5 spec.

Harpiliopsis depressus (Stimpson)

a. Ine village, Arno Atoll, Marshall Islands; in coral heads of sea reef; June-September 1950; R. W. Hiatt; Loc. E. 1-307, E 1-388: 7 spec.

b. Ine village, Arno Atoll, Marshall Islands; in Pocillopora heads of sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-618, E 1-633: 5 ovig. females.
c. Ine village, Arno Atoll, Marshall Islands; in Stylophora heads of sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-649: 3 spec.
d. Ine village, Arno Atoll, Marshall Islands; in Seriatopora heads of lagoon reef; June-September 1950; R. W. Hiatt; Loc. E 2-350: 3 spec.
e. Ine village, Arno Atoll, Marshall Islands; in Acropora heads of lagoon reef; June-September 1950; R. W. Hiatt; Loc. E 2-375: 1 spec. (damaged).
f. Onotoa Atoll, Gilbert Islands; about 8600 feet N. 18° W. from Tabuarorae Maneaba in 17 ft. of water mean low tide; August 10, 1951; P. E. Cloud; Loc. GOC-35: 3 spec.

Stegopontonia commensalis Nobili
a. North end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; from pockets (sandy bottom, etc.) in inner reef only near lagoon edge of reef in transect area at night; from sea urchin No. 2238, Echinothrix diadema (L.); September 2, 1952; J. P. E. Morrison; Loc. 2246: 1 ovig female.
b. Ilot Porc Epic, ESE. of Noumea, New Caledonia; commensally on Diadema setosum (Leske); April 19, 1953; R. Catala: 1 ovig. female.

Coralliocaris graminea (Dana)
a. Ine village, Arno Atoll, Marshall Islands; from head of Acropora sp.; about midway between the shore and the sea reef; June-September, 1950; R. W. Hiatt; Loc. E 1-288: 3 spec.
b. Ine village, Arno Atoll, Marshall Islands; about half way out on sea reef flat; from sponge on base of dead coral head; June-September 1950; R. W. Hiatt; Loc. E 1-307: 4 spec.
c. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef flat; from heads of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-388: 1 spec.
d. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef; from head of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-612: 8 spec.
e. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef; from head of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-642: 2 spec.
f. Ine village, Arno Atoll, Marshall Islands; near outer edge of lagoon reef; from Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 2-375: 6 spec.

Coralliocaris superba (Dana)
a. Lagoon N. of Matuis Beach, NW. Saipan, Marianas Islands; picked from head of brown Acropora sp.; December 12, 1948; P. E. Cloud: 1 spec.
b. Saipan, Marianas Islands; from a single large head of Acropora leptocyathus (Brook); July 2, 1949; P. E. Cloud: 2 spec.

c. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef flat; from heads of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-388: 3 spec.
d. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef; from head of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-642: 1 spec.

Coralliocaris nudirostris (Heller)
a. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef; from head of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-612: 2 spec.
b. Onotoa Atoll, Gilbert Islands; slightly less than 4 miles N. 85° W. from Aiaki Maneaba in outer lagoon; patch reefs rising above limesand bottom at 14 feet to within 6 feet of the surface; July 30, 1951; P. E. Cloud; Loc. GOC-28: 1 ovig. female.

Jocaste lucina (Nobili)
a. Lagoon W. of Saipan, Marianas Islands; from coral heads in 4-6 ft. of water; April 7, 1949; P. E. Cloud; Loc. A-11: 6 spec.
b. Lagoon W. of Saipan, Marianas Islands; April 19, 1949; P. E. Cloud; Loc. F-X: 1 spec.
c. Lagoon W. of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4, 500 yds. NNE. of Mañagaha Island: 1 spec.
d. Ine village, Arno Atoll, Marshall Islands; about midway between the shore and the sea reef edge; from head of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-288: 1 spec.
e. Ine village, Arno Atoll, Marshall Islands; about half way out on sea reef flat; from sponge on base of dead coral head; June-September 1950; R. W. Hiatt; Loc. E 1-307: 4 spec.
f. Ine village, Arno Atoll, Marshall Islands; near outer edge of sea reef flat; from heads of Acropora sp.; June-September 1950; R. W. Hiatt; Loc. E 1-388, E 1-612, E 1-642: 28 spec.
g. Onotoa Atoll, Gilbert Islands; about 9200 ft. S. 72° W. from offshore end of Government Station jetty (on S. portion of northern main island) just S. of main passage out of lagoon (Rawa ni Kororo) where coral shoals known as Aon te ra Bata begin to deepen; from low coral patch about 14 ft. below the surface; bottom limesand, at about 16 feet depth; July 29, 1951; P. E. Cloud; Loc. GOC-27: 1 spec.
h. Onotoa Atoll, Gilbert Islands; about 3½ miles N. 31° W. from Tabuarorae Maneaba near the center of Te Rawa ni Bao, a pass in the S. part of the leeward reef; from thickly set coral masses rising from 15 feet (sounded at low tide) to within about 8-10 feet of the surface locally; August 23, 1951; P. E. Cloud; Loc. GOC-51: 1 ovig. female.

Conchodytes meleagrinae Peters
a. Ine village, Arno Atoll, Marshall Islands; edge of lagoon reef; commensal with pearl oyster, Pinctada margaritifera (L.); June-September 1950; R. W. Hiatt; Loc. E 2-25: 1 ovig. female.

b. Tehakapikipiki Island, Raroia Atoll, Tuamotu Islands; slope of Tomogoru patch reef, approximately 1 mile W. of the center of lagoon shore; depth 30 feet; from mantle cavity of pearl oyster (No. 2017); July 29, 1952; J. P. E. Morrison; Loc. 2018: 2 spec.
c. South end of Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; off inner reef; depth 15 feet; from pearl oyster (No. 2021); August 1, 1952; J. P. E. Morrison; Loc. 2022: 2 spec.

Conchodytes tridacnae Peters
a. Arno Atoll, Marshall Islands; commensal in the mantle cavity of giant clams, Tridacna elongata; June-September 1950; R. W. Hiatt; Loc. E 2-442: 2 spec.

Family Gnathophyllidae

Gnathophyllum americanum Guérin
a. Lagoon W. of Susupe, Saipan, Marianas Islands; April 24, 1949; P. E. Cloud, Jr.; Loc. G-1: 2 spec.
b. East side of Kakapuka Island, Raroia Atoll, Tuamotu Islands; from first channel; August 26, 1952; J. P. E. Morrison; Loc. 2187: 1 spec.

STENOPODIDEA

Family Stenopodidae

Stenopus hispidus (Olivier)
a. Lagoon W. of Susupe, Saipan, Marianas Islands; April 24, 1949; P. E. Cloud; Loc. G-1: 2 spec.
b. Onotoa Atoll, Gilbert Islands; July-September 1951; A. H. Banner: 1 spec.
c. Onotoa Atoll, Gilbert Islands; lagoon; July 24, 1951; A. H. Banner: 1 spec.
d. Mataira Island, Raroia Atoll, Tuamotu Islands; under rock in pool near shore, outer reef flats; July 16, 1952; J. P. E. Morrison; Loc. 1944: 2 spec.

STOMATOPODA

Pseudosquilla ornata Miers

a. Lagoon west of Saipan, Marianas Islands; April 28, 1949; April 28, 1949; P. E. Cloud; Loc. 2, from ½ ton block of dead coral-algal rock taken on anchor of LT 535: 1 spec.

Pseudosquilla oxyrhyncha Borradaile

a. About ½ mile E. offshore from the central part of Bikati Island, Butaritari Atoll, Gilbert Islands; in pocket of broad area of Heliopora reef; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.

Pseudosquilla sp.

a. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 1 juv.
b. Lagoon west of Saipan, Marianas Islands; May 13, 1949; P. E. Cloud; Loc. D-8: 1 juv.
c. Ujae Atoll, Marshall Islands; skimmed from surface of sea at stern of ship under lights; anchored 200 feet outside Ujae passage; 1951-1952; F. S. MacNeil; Loc. 922: 2 juvs.

All are juveniles, a and c are in the monodactyla stage, b is slightly larger.

Gonodactylus gyrosus Odhner

a. Ine village, Arno Atoll, Marshall Islands; from outer edge of sea reef; June-September 1950; R. W. Hiatt; Loc. E 1-406: 1 spec.

Gonodactylus falcatus (Forskål)

a. Matuis Beach, NW. Saipan, Marianas Islands; taken mostly from clumps of brown Acropora and partly from Pocillopora damicornis cespitosa Dana; December 1, 1948; P. E. Cloud: 2 spec.
b. Onotoa Atoll, Gilbert Islands; August 8, 1951; A. H. Banner; Loc. B-4: 2 spec.

Gonodactylus chiragra (Fabr.)

a. Saipan, Marianas Islands; 1949; P. E. Cloud; Loc. C-IX: 1 spec.
b. Lagoon west of Saipan, Marianas Islands; April 12, 1949; P. E. Cloud; Loc. A-5: 2 spec.
c. Lagoon west of Saipan, Marianas Islands; Loc. A-7; April 27, 1949; P. E. Cloud: 1 spec.
d. Lagoon west of Saipan, Marianas Islands; April 4, 1949; P. E. Cloud; Loc. A-11; from coral heads in 4-6 feet of water: 1 spec.
e. Lagoon west of Saipan, Marianas Islands; May 6, 1949; P. E. Cloud; Loc. D-5: 5 spec.
f. Lagoon west of Saipan, Marianas Islands; May 3, 1949; P. E. Cloud; Loc. E-4: 1 spec.
g. Lagoon west of Saipan, Marianas Islands; May 4, 1949; P. E. Cloud; Loc. E-7; from coral rock: 3 spec.

h. Lagoon west of Saipan, Marianas Islands; April 19, 1949; P. E. Cloud; Loc. F-X: 2 spec.
i. Lagoon west of Saipan, Marianas Islands; June 20, 1949; P. E. Cloud; Loc. 4; 500 yards NNE. of Mañagaha Island: 7 spec.
j. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-305: 1 spec.
k. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-178: 1 spec.
l. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-375: 1 spec.
m. Onotoa, Gilbert Islands; July 13, 1951; A. H. Banner; Loc. A-2: 1 spec.
n. Onotoa, Gilbert Islands; July 19, 1951; A. H. Banner; Loc. A-4: 1 spec.
o. Onotoa, Gilbert Islands; August 2, 1951; P. E. Cloud; Loc. GOC-30: 1 spec.
p. Onotoa, Gilbert Islands; August 1, 1951; P. E. Cloud; Loc. GOC-32: 1 spec.
q. Bikati Islet, Butaritari Atoll, Gilbert Islands; September 3, 1951; P. E. Cloud; Loc. GBC-2: 1 spec.

Gonodactylus chiragra platysoma Wood-Mason
a. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-294: 2 spec.
b. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 1-701: 1 spec.
c. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-22: 1 spec.
d. Arno Atoll, Marshall Islands; 1950; R. W. Hiatt; Loc. E 2-511: 2 spec.
e. Onotoa, Gilbert Islands; August 4, 1951; A. H. Banner; Loc. A 10-12: 1 spec.
f. West of Ailuk Island, Ailuk Atoll, Marshall Islands; seaward side of leeward reef; 1951-1952; F. S. MacNeil; Loc. 847: 2 spec.
g. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; under rocks on middle to inner section or zone of outer reef opposite village; July 6, 1952; J. P. E. Morrison; Loc. 1861: 1 spec.
h. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef flats; July 11, 1952; J. P. E. Morrison; Loc. 1920: 1 spec.
i. Ngarumaoa Island, Raroia Atoll, Tuamotu Islands; outer reef flats; August 25, 1952; J. P. E. Morrison; Loc. 2215: 1 spec.

Appendix

Collection data relating to specimens taken by R. W. Hiatt at Arno Atoll

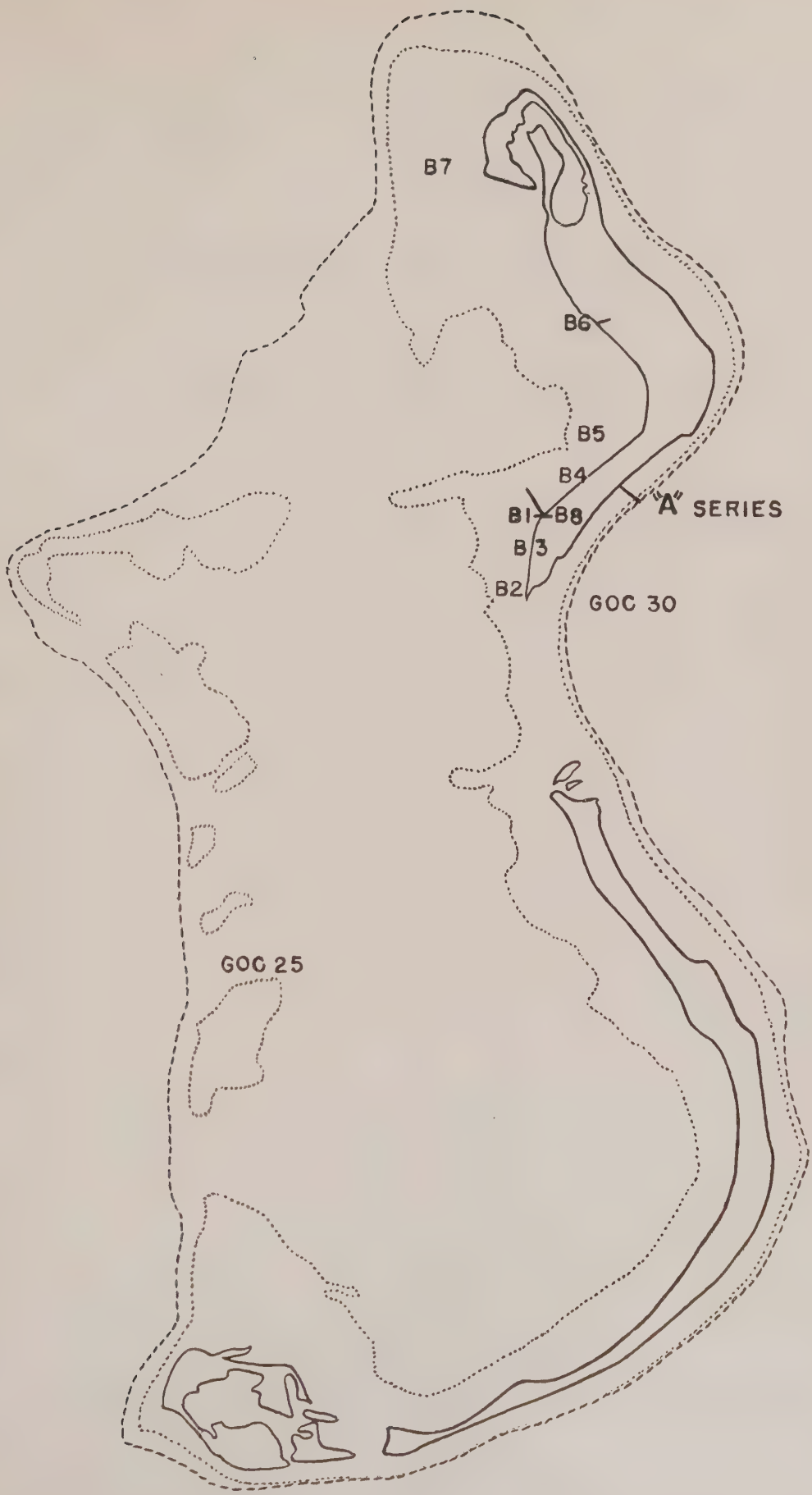
E 1-3. Churchyard, Ine Village, about 30 yards from edge of water.
E 1-7. Under rocks near shore on sea reef. Ine.
E 1-8. Common on rocks near shore, especially at night.
E 1-10. Undersides of rocks in shallow water on sea reef.
E 1-12. On rocks exposed at low tide, sea reef, Ine.
E 1-16. Sandy bottom near shore, sea reef, Ine.
E 1-28. Inshore area, sea reef, Ine.
E 1-41. Sandy bottom inshore on sea reef, Ine.
E 1-42. Common under rocks sitting in inshore tide pools, sea reef, Ine.
E 1-44. Sandy bottom inshore on sea reef, Ine.
E 1-46. Common under rocks and boulders inshore on sea reef, Ine.
E 1-47. Common in sand inshore on sea reef, Ine.
E 1-48. Common under rocks in sand inshore on sea reef, Ine.
E 1-51. Common in inshore area of sea reef, Ine.
E 1-52. Inshore area of sea reef, Ine.
E 1-66. Sea reef, Ine, about halfway between beach and outer edge.
E 1-108. Inshore area, sea reef, Ine.
E 1-109. Same area as E 1-108.
E 1-153. In bases of dead coral heads, halfway out on sea reef, Ine.
E 1-163. Uncommon in dead bases of heads of Montipora garinardi, sea reef, Ine.
E 1-171. Common, inshore on sea reef, Ine.
E 1-178. Sea reef, Ine, near outer edge.
E 1-294. Bases of dead coral about halfway out on sea reef, Ine.
E 1-302. Sea reef near outer edge.
E 1-304. Common about halfway out on sea reef, Ine.
E 1-305. Brackish water pond on Malel Island, Arno Atoll.
E 1-386. Sea reef near outer edge, Ine.
E 1-389. Near outer edge of sea reef, Ine.
E 1-390. Near outer edge of sea reef, Ine.
E 1-391. Near outer edge of sea reef, Ine.
E 1-399. Beach rock on sea reef side, Ine.
E 1-400. Beach rock and boulders on sea reef side, Ine.
E 1-406. Outer edge of sea reef, Ine.
E 1-411. Outer sea reef edge, Ine.
E 1-413. Taken from trunk of breadfruit tree, 15 feet from the ground. Several others seen higher up, all on green patches of moss or lichens.
E 1-416. Taken under rocks.
E 1-417. Taken from trunks of coconut palms bearing epiphytic ferns 3 to 4 feet above the ground.
E 1-418. Common under rocks 100-200 feet inland from sea beach.
E 1-419. Found under overhanging base of coconut palm.
E 1-419a. Very common over much of land area.
E 1-420. Common over much of land area.

E 1-423. Common on many islets and extends across from sea to lagoon side on narrow islets.
E 1-424. Under rocks on seaward portion of Ine island.
E 1-426. Common on land near seaward side of Ine island.
E 1-427. As in E 1-426.
E 1-428. As in E 1-426.
E 1-429. As in E 1-426.
E 1-435. In sandy bottom, inshore area of sea reef, Ine.
E 1-438. Center of Ine island.
E 1-440. Center of Ine island.
E 1-589. Ine island about 200 feet from the lagoon beach.
E 1-592. Inshore area of sea reef, Ine.
E 1-620. Uncommon near outer edge of sea reef, Ine.
E 1-622. Common near outer edge of sea reef, Ine.
E 1-631. From heads of Pocillopora sp. on outer seaward slope of reef flat, Ine.
E 1-644. From Acropora sp. heads, on outer sea reef slope, Ine.
E 1-645. From heads of Stylophora sp., on outer sea reef slope, Ine.
E 1-651. From heads of Pocillopora sp., on outer sea reef slope, Ine.
E 1-658. Land near lagoon side of Ine island.
E 1-659. From decaying vegetation and coconut bushes, near lagoon beach, Ine island.
E 1-660. Land at edge of lagoon reef beach, Ine.
E 1-661. As in E 1-660.
E 1-662. From boulders and rocks high on the sea reef boulder rampart, Ine.
E 1-665. As in E 1-662.
E 1-666. ?
E 1-666a. Under rocks at inner edge of sea reef, Ine.
E 1-667. Most common crab under boulders resting on sand in shallow tide pools of intertidal area of sea reef shore, Ine.
E 1-668. Uncommon, as in E 1-667.
E 1-673. Commensal with giant anemone, Discosoma, on outer sea reef slope, Ine.
E 1-678. Outer edge of sea reef, Ine.
E 1-680. Sand beach on sea side, Ine.
E 1-701. Ine.
E 1-702. "
E 1-703. "
E 1-704. "
E 1-705. "
E 2-3. Abundant in shallow water of lagoon reef in sandy areas near shore, Ine.
E 2-4. Lagoon beach, Ine.
E 2-5. Sandy bottom inshore on lagoon reef flat, Ine.
E 2-7. Tide pool near shore on lagoon reef flat, Ine.
E 2-8. Under rocks near shore on lagoon reef flat, Ine.
E 2-16. Taken from shell of Trochus niloticus off outer slope of lagoon reef, Ine.
E 2-17. Lagoon beach, Ine.
E 2-18. Taken from trunks of bread fruit trees on Tagelib islet, Arno Atoll.

E 2-19. From head of Pocillopora near lagoon reef shore, Ine.
E 2-20. Under rocks on shore of lagoon, Ine.
E 2-21. Sand bottom inshore on lagoon reef flat, Ine.
E 2-22. From base of dead coral in shallow water inshore on lagoon reef, Tagelib Island, Arno Atoll.
E 2-23. From sandy bottom of lagoon reef, 20 feet deep, Tagelib Island, Arno Atoll.
E 2-123. Walked into house in interior of Ine Island.
E 2-124. Ine Village.
E 2-138. Lagoon reef flat near outer portion, Ine.
E 2-144. Inshore area of lagoon reef flat, Ine.
E 2-149. Upper edge of lagoon beach, Ine.
E 2-150. Lagoon beach, Ine.
E 2-151. From sandy bottom inshore on lagoon reef, Ine.
E 2-155. Sandy shore, lagoon beach, Ine.
E 2-164. Sandy bottom at inner edge of lagoon reef flat, Ine.
E 2-170. Inner edge of lagoon reef flat, Ine.
E 2-171. Uncommon under coral heads near outer edge of lagoon reef flat, Ine.
E 2-172. From bread fruit tree in interior of Ine Island.
E 2-175. Under coral head near outer edge of lagoon reef flat, Ine.
E 2-178. In base of dead coral head at inner edge of lagoon reef flat, Ine.
E 2-180. Inner portion of lagoon reef flat, Ine.
E 2-185. Very common under rocks and in crevices in intertidal area of lagoon reef flat, Ine.
E 2-187. Under rocks at high tide level and above on lagoon beach, Ine.
E 2-189. Common in tidepools in intertidal area of lagoon reef flat, Ine.
E 2-190. As in E 2-189.
E 2-192. Very common under rocks near the water's edge, lagoon reef flat, Ine.
E 2-275. Dredged from 20 fathoms in the lagoon.
E 2-304. Common in inshore area of lagoon reef flat.
E 2-306. In sandy bottom at inshore edge of lagoon reef flat, Ine.
E 2-307. As in E 2-306.
E 2-308. As in E 2-306.
E 2-325. Common in inshore area of lagoon reef flat, Ine.
E 2-339. Outer edge of lagoon reef flat, Ine.
E 2-340. Outer portion of lagoon reef flat, Ine.
E 2-351. From heads of Ceriatopora hystrix near outer edge of lagoon reef flat, Ine.
E 2-366. From heads of Stylophora mordax near outer edge of lagoon reef flat, Ine.
E 2-367. Outer edge of lagoon reef flat, Ine.
E 2-369. Inshore area of lagoon reef, Ine.
E 2-400. From rocks at upper edge of intertidal zone on lagoon shore, Ine.
E 2-401. As in E 2-400.
E 2-403. As in E 2-400.

E 2-405. Near outer edge of lagoon reef flat, Ine.
E 2-443. Near outer edge of lagoon reef flat, Ine.
E 2-454. Outer lagoon reef slope, Ine.
E 2-455. Under coral head, outer lagoon reef slope, Ine.
E 2-457. Near outer edge of lagoon reef flat, Ine.
E 2-488. ?
E 2-496. Outer lagoon reef slope, Ine.
E 2-497. As in E 2-496.
E 2-498. Near outer edge of lagoon reef flat, Ine.
E 2-502 to E 2-517. All from lagoon reef except E 2-513 and E 2-514 which are land forms from Ine Island.

MAP NO. I.



MAP NO. 2.

ATOLL RESEARCH BULLETIN

No. 25

Bryophytes from Arno Atoll, Marshall Islands

by

Harvey Alfred Miller and Maxwell S. Doty

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BRYOPHYTES FROM ARNO ATOLL, MARSHALL ISLANDS[1]

by Harvey Alfred Miller[2] and Maxwell S. Doty[3]

There appears to have been but a single previous record of a bryophyte from the Marshalls. This is Calymperes tenerum, a widely distributed species in Oceania, collected by W. R. Taylor (12) in the northern Marshall Islands in 1946. Glassman (7), and others (2,3,8,9,10,11), have reported on the bryophytes from the nearby Caroline Islands. Dixon (4) published a list of mosses from the Gilbert Islands, south of the Marshalls. There is little or no reference to the bryophyta in Catala's "Report on the Gilbert Islands" prepared for the South Pacific Commission, or in the vegetational and other reports on the Pacific Science Board's atoll studies.

During the summer of 1951, Leonard Horwitz collected several species of mosses and liverworts on Arno Atoll in the southern Marshall Islands in connection with the Coral Atoll Project of the Pacific Science Board. Horwitz's collections were turned over to the authors at the University of Hawaii for determination. It is these collections which form the basis for this report. The senior author made the determinations, produced the first draft of the report manuscript and drew up the specific conclusions in reference to the bryophyta. The junior author contributed the original illustrations, the key and the labor involved in finishing the work in this form.

The authors are greatly indebted to E. B. Bartram who made many of the original determinations of the mosses. The specimens cited herein are deposited in the U. S. National Museum, Washington, D. C., and in the herbarium of the B. P. Bishop Museum, Honolulu, with duplicates, wherever possible, in the Chicago Museum of Natural History and the herbaria of E. B. Bartram and the authors. The senior author wishes to thank Prof. Harold St. John, of the University of Hawaii, for provision of the assistantship and space in the Department of Botany which have enabled him to continue his studies of Central Pacific bryophytes. The authors are grateful for the material assistance given this project by Mr. Harold J. Coolidge, Mrs. Lenore Smith, and Miss Ernestine Akers, of the Pacific Science Board.

For the convenience of future atoll workers at Arno who are not bryologists, the following key is included. A set of figures made from camera lucida sketches of leaves has been included. This has been done because the

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leaves are so distinctive that they may be used to distinguish rather positively between the few known Arno mosses. With the description of each figure there appears the number of the collection from which the drawing was made and certain remarks of aid in distinguishing the species. Illustrations have not been included for the liverworts as they are much more rare and their taxonomy is as yet most incomplete in many respects.

The characteristics to which this key refers are those visible in fresh, water-soaked or wet, mature specimens. The leaves of all mosses should be compared with the figures as to size and other characteristics, for juvenile forms, in particular, may not "key out" in this key. It is our hope that these devices will facilitate greater familiarity with the mosses in the field and promote a study of their role in the atolls.

KEY TO THE BRYOPHYTA KNOWN FROM ARNO ATOLL

A. Axis with leaves borne in 3 planes and in such a manner that the moist fronds are not bilateral; leaves elliptical to linear lanceolate; branches usually all erect from the substratum (mosses):

B. Leaf bases, stems and occasionally some leaves red when stems not densely clothed with leaves; growing on the ground: Bryum nitens.

B. Leaf bases, stems and leaves never red (though often brown); growing on wood or rocks or occasionally on the ground:

C. Growing on tree trunks or vegetable debris; tufts often over 1 cm. thick, dark brown inside or pale whitish-green throughout:

D. Tufts pale whitish green throughout: Leucophanes glaucolum.

D. Tufts yellow at surface, dark brown internally: Calymperes mollucense.

C. Growing on various other substrata or yellow green to green throughout, or if in dense tufts then yellow-green to green:

E. Leaves with an area of large cells conspicuous near leaf base (Figs. 3, 4, 5); midribs extending to apex in leaves, percurrent, often extending into macroscopically visible propagulae (terminal lumps which are asexual reproductory bodies); no capsules known for the Arno material:

F. Prostrate moss with green stems and often widely spaced green leaves; leaf tips denticulate: Calymperes hyophyllaceum.

F. Erect moss with closely placed brownish green leaves; leaf tips not denticulate:

Calymperes tenerum.

E. Leaves without an area of large cells near the base (Figs. 2, 6); midribs lacking or not extending completely to the apex; leaf tips not bearing propagulae; capsules often present in abundance:

G. Leaves tapering quickly to a long point, often sickle shaped; midrib absent or extremely short; capsules often abundant:

Ectropothecium monumentorum.

G. Leaves strap-shaped, broadly rounded at apex, almost symmetrical; midrib extending nearly to leaf apex; capsules not known in Arno material:

Splachobryum indicum.

A. Axis with leaves borne in two planes and in such a manner that flat or hemispherical branches result; leaves either overlapping and ovoid or like the flattened axis in structure; usually all branches (except in Ptychocoleus) prostrate on the substratum (liverworts).

H. Leaves and axis alike in appearance, flat; frond prostrate:

Riccardia multifida.

H. Leaves bladelike and axis terete; frond free or prostrate:

I. Leaves strongly overlapping so as to form a frond which is hemispherical in cross section when damp and more or less cylindrical when dry; fronds becoming free from the substratum, forming a moss-like coating on tree bases up to one centimeter thick:

Ptychocoleus sp.

I. Leaves not strongly overlapping, if at all; frond usually flattened against the substratum:

J. Fronds green, about or over 1.5 mm. broad:

Lejeunea sp.

J. Fronds pale if green at all, about or less than 0.5 mm. broad:

Microlejeunea sp.

MOSSES (MUSCI)

Leucophanes glauculum C. Müll. in Micholitz, M. Philippines 163.

(SEE: Figure 1.)

Eastern end of Ine Island, Horwitz 9669, 9670B, August 19, 1951.

Distribution: Malaysia, Caroline Islands.

This plant was collected on decaying wood and coconut, Cocos nucifera, husks. It formed dense tufts where found. E. B. Bartram (correspondence) reports that F. R. Fosberg has collected this species in abundance on strand coconuts in the Carolines.

Calymperes hyophyllaceum C. Müll. in Besch., Essai Calymp. Ann. Sci. Nat. 287. 1895.

(SEE: Figure 3.)

Malel Island, Horwitz 9425B.

Distribution: Sumatra, Java, Philippines (1).

Mixed with Riccardia multifida growing in the shade and on the under side of damp outer and inner coconut husks. This record is based on a few scattered plants, but the species is so distinct that there is little question of its identity.

At the apex the leaves of this genus may bear propagulae in varying stages of development. To the naked eye the asexual reproductory lumps of cells appear as little balls on the leaf tips. In figures 3, 4, and 5 the variation in shape of the apex may be due to the degree of maturity, largely in reference to the stage of propagulum development. This genus of mosses is the only one from the Marshalls that produces such structures. The presence of these propagulae is a good field character, the presence of which on a moss from Arno can be taken as indicating this genus, Calymperes.

Calymperes mollucense Schwaegr., Suppl. II, II, p. 99, t. 127. 1824.

(SEE: Figure 5.)

Malel Island, Horwitz 9422, 9426A, 9429B, August 4, 1951.

Distribution: Moluccas, Fiji, Philippines (1).

Horwitz collected a large tuft (#9422) of this species from the base of one coconut tree but gave no indication of its abundance or whether it occurs on more than one island in the atoll. A few isolated plants (#9429B) were scattered with the Ptychocoleus (#9429A) reported here, also from a coconut trunk.

Calymperes tenerum C. Müll., Linnaea 37: 174. 1871-73.

(SEE: Figure 4.)

Ine Village, Ine Island, Horwitz 9310A, August 3, 1951.

Distribution: India, Malaysia, Philippines, and Pacific Islands to Hawaii.

This is a widely distributed species and the only one reported by Taylor (12) from the northern Marshalls. It is interesting to note that Taylor found it abundant on Rongerik, Rongelap, Bikini and Eniwetok. The collection from Arno consisted of scattered plants among lichens scraped from the trunk of a breadfruit Artocarpus sp. tree.

The collector noted the propagulae to be particularly conspicuous on this moss when collected.

Splachnobryum indicum C. Müll., Linnaea 37: 174. 1871-73.

(SEE: Figure 2.)

Ine Village, Ine Island, Horwitz 9437B.

Distribution: India, Java (1).

Scattered plants among Ectropothecium monumentorum growing "on top, sides, and even some on bottom of shady moist stones near a cistern."

The Philippines have not been included in the distribution of this species because there is considerable doubt that the plant which Bartram cites (1: 126) is S. indicum. If the Philippine plant is a distinct species, then this record leaves a larger gap in distribution than any of the other species cited herein.

Bryum nitens Hook, in Wall., Cat. n. 7592 et Icon. pl. rar. t. 20, fig. 6. 1837.

(SEE: Figure 7.)

On vertical layer of soil lining main path across Jilang Island in open coconut grove. Horwitz 9105, July 17, 1951.

Main roadway of Ine Village, Ine Island. Horwitz 9312, August 3, 1951.

Distribution: Nepal, Ceylon, Java, Bali (8), Fiji.

The extension of range indicated by this collection may not be as great as shown here since there is considerable question whether this species and Bryum ambiguum Duby (known from the Philippines) are distinct from one another. E. B. Bartram (correspondence) suspects that Fleischer's (5) remark about B. nitens, "Diese Art zeigt so geringe Unterscheide von voriger, dass ich sie nur als Abart auffassen kann. Sie is sicher nur eine kleinere Varietät von Br. ambiguum, von dem sie sich mehr durch eine Summe kleiner Merkmale, als wie specifisch unterscheidet" was well justified.

Ectopothecium monumentorum (Duby) Jaeg., Adumbr. 2 (1877-1878) 523.

(SEE: Figure 6.)

On ground in a coconut grove, Jilang Island, Horwitz 9103, July 17, 1951. On damp stump and on outer husk of coconut, Malel Island, Horwitz 9426B, 9427, 9424, August 4, 1951.

On shady moist stones near a cistern, Ine Village, Ine Island, Horwitz 9437A, August 9, 1951.

On decaying wood at eastern end of Ine Island, Horwitz 9670A, August 19, 1951.

Distribution: Sumatra, Java, Timor, Philippines, Carolines (1), Gilberts (4).

This moss appears to be common in the southern Marshalls from the number of collections Horwitz made. It was fruiting abundantly and was found in a variety of habitats. This was the only species of moss in the whole collection with sporophytes (capsules).

LIVERWORTS (HEPATICAE)

Riccardia multifida (L.) S. F. Gray, Nat. Arr. Brit. Pl. 1: 683, 1821.

Growing over damp coconut husks and occasionally also on inner husks. These were growing in the shade and on under surfaces. Malel Island, Horwitz 9425A, August 4, 1951.

Distribution: Worldwide (6).

Although cosmopolitan, this is the first record of the species from eastern Micronesia. See also next species.

Riccardia sp.

Found growing on a piece of outer coconut husk by Horwitz, 9426C, at Malel Island, August 4, 1951.

While the literature is not presently available for a definite determination, the material seems to be placeable close to the widely distributed Riccardia sinuata (Dicks.) Trev. The thalli of this material and this species (6) have no unicellular margin more than one cell broad. R. multifida has a 2- to 3-celled unistratose margin along with additional differences in the sporophyte. The more dependable sporophyte characters were not available in our sterile material.

Microlejeunea sp.

On an old inner coconut husk found lying in a damp situation, Malel Island, Horwitz 9426D, 9428, August 4, 1951.

This is a large and widespread tropical genus, the previous nearest report being from Ponape by Glassman (7).

Lejeunea sp.

Growing on the trunk of Cocos nucifera, Jilang Island, with various other bryophytes and lichens, Horwitz 9102B, July 17, 1951.

In abundance but only on dampest parts of the same breadfruit tree trunk which bore the Calymperes tenerum collection, 9310, Ine Village, Horwitz 9316, August 3, 1951.

The closest locality known for this genus is Yap, from which Stephani (10) reported two species.

Ptychocoleus sp.

Growing on upfacing side of a slanting coconut tree from the ground level up to about the 4 or 6 ft. level where it thinned out, Malel Island, Horwitz 9429A, August 4, 1951. On the same island and date on a coconut husk, Horwitz 9426E.

This may prove to be a species distinct from all sofar described; as a search of the available literature has revealed nothing close to it. However, here as with the previously cited lejeuneoid species, the limited library sources immediately available have necessitated a temporary reservation of judgment concerning the specific identity.

DISCUSSION

The only bryophytes known to be common to both the Gilbert and the Marshall Islands are Calymperes tenerum and Ectropothecium monumentorum. These two are species of wide Indomalaysian distribution.

It is particularly interesting to note that although a goodly number of investigators have reported on moss collections from the Carolines, most of the species found on Arno Atoll have not been reported from there. Perhaps the reason that these species have not been reported from the Carolines lies in the fact that the greatest interest in these islands has been centered on the rain forests of the higher islands and the moss strand vegetation, which is similar to that of an atoll, has been grossly neglected.

There are several good reasons for believing that the Carolines are the route of migration for the Marshallese species. Nearly all of the mosses cited here are found in the Philippines. The strong storm winds of the fall and winter months are widely experienced coming from the west and southwest and it seems reasonable to assume that these winds might at some time or other carry spores as far as the Marshalls. There is a possibility, too, that the early inhabitants of these islands unwittingly carried spores or propagulae with them during their migrations.

There is a possibility of comparatively recent introduction by traders and copra boats, but if this is so then one is led to wonder why these mosses are not found in the Gilberts which are isolated by the winds and currents from the Marshalls. It seems logical that some boats would visit both groups.

Until more is known of the distribution of bryophytes in the Pacific one can propose only such broad hypotheses, to be later substantiated, modified or rejected on the basis of more complete information.

A search was made for literature reporting ethnic uses of bryophytes in Micronesia. None was found. It is hoped that future workers at Arno will inquire into the ethnobotany of the different bryophytes and that such work will be facilitated by the treatment which has been presented here.

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EXPLANATION OF FIGURES

Figure 1) *Leucophanes glauculum* (9669).

The pale color, hardly green at all, and the leaf size distinguish this species from other Arno species.

Figure 2) *Splachnobryum indicum* (9437B).

Note that the midrib does not quite reach the leaf tip, there often being a group of specialized cells between the leaf apex and the tip of the midrib.

Figure 3) *Calymperes hyophyllaceum* (9425B).

The leaf tip shapes are variable and of relatively little taxonomic value. The leaf bases with their conspicuous areas of large cells, called cancellineae, and the nature of the leaf margins are much more dependable taxonomic characters. In this particular species, opposite the cancellineae and again near the apex, the margin of the leaf tends to have a little tooth opposite each marginal cell (denticulations).

Figure 4) *Calymperes tenerum* (9310A).

See notes under figure 3 and in text under the other species of *Calymperes*. The margins of the leaves in this species are nowhere denticulate. Note the difference in shape of the cancellineae.

Figure 5) *Calymperes mollucensis* (9422).

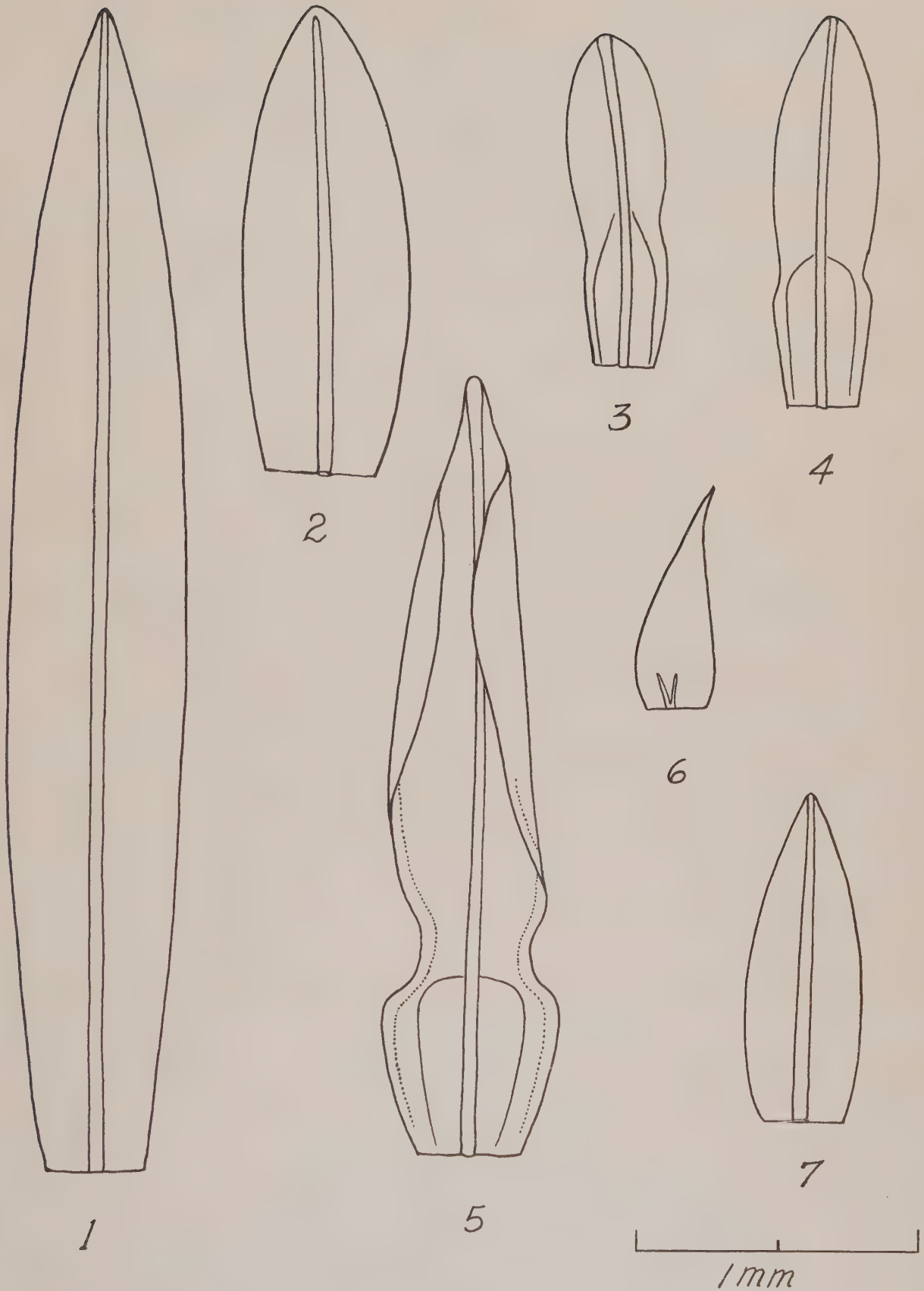
See notes under figure 3 and in text under the other species of *Calymperes*. The dotted lines just within the leaf margin indicate the extent of a thickened strip. This is absent in the other two Arno species.

Figure 6) *Ectropothecium monumentorum* (9103).

Most of the leaves of this species are sickle-shaped. There are only very small traces of midrib thickenings near the base of the leaves.

Figure 7) *Bryum nitens* (9312).

The midrib extends right to the apex of these usually strongly concave, boat-shaped, green leaves.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ATOLL RESEARCH BULLETIN

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Scorpions on Coral Atolls

by

Marie Hélène Sachet

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SCORPIONS ON CORAL ATOLLS

by
Marie-Hélène Sachet

With their very limited fauna, coral atolls are remarkably free of "dangerous animals". There are of course no large mammals, and no carnivorous or poisonous reptiles except for an occasional sea-snake. The only macroscopic animals which can be described as dangerous in themselves are sharks and poisonous fish, the Conus shells, and the black-widow spider (Latrodectus mactans) introduced on Kwajalein. With these and a few other exceptions, the animal pests have mostly a nuisance value, or cause painful, but not dangerous stings. Such are ants, wasps, scorpions, centipedes, flies, mosquitoes, and even birds when they form large colonies. Some of these pests, of course, are dangerous as carriers of disease-producing organisms, or parasites. A few can be rather harmless individually but dangerous if met with in great numbers: the Portuguese Man o'War for instance causes such painful stings that encountering a great many of them may render a swimmer panicky and quite helpless.

Two kinds of animals occur on most atolls which inspire often unwarranted fears in the various parts of the world where they are found: these are the centipedes and scorpions. A few species of the former cause very painful bites, and some scorpions are even deadly, but the dread they inspire is often out of proportion with the actual danger. The species of these which occur on atolls are not at all dangerous, and not too abundant, either. However, it seemed worthwhile to assemble the information on one of these groups, the scorpions, as a zoological summary with practical aspects.

In spite of their formidable appearance and their sting, scorpions are rather fascinating for various reasons. The group is rather homogeneous, and all scorpions look much more alike than different spiders, for instance. They are often found in pairs, the couple apparently going about together for a long time before fertilization takes place, at which time they go through a remarkable courtship and what is called a mating dance. These have been described in great detail by J. Henri Fabre, for the scorpions which live in the south of France, and observed in various other species. After these extraordinary performances, fecundation takes place, and the female eats up the male, at least in some species. When the young are born they look just like adult scorpions, and are simply enclosed inside a thin membrane. They break out of it at once and promptly climb onto the back of their mother. They are rather easy to observe thus, because they are white and almost translucent, while adult scorpions are yellow to black.

These are just a few of the peculiarities of these animals. Another, of a different order, but very interesting, too, is that scorpions are one of the oldest groups of living animals: in other words, fossil scorpions are found in very ancient (Silurian, about 400 million years old) deposits, and look astonishingly like modern scorpions. These must be extremely successful animals, therefore, which is only partly explained by the fact that they have few enemies.

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This brief account is no attempt to exhaust the interesting facts known or suspected about scorpions, but aims to render the idea of these animals less formidable and dreadful before discussing them in more detail.

Scorpions are arthropods, which means that they belong to the phylum of invertebrates whose legs are jointed and whose skeleton is an external armor of chitin. Other arthropods are crustaceans, for instance, and insects. The group to which scorpions belong, and which corresponds in the classification to crustaceans or insects is that of the Arachnida. Scorpions are one of the groups of arachnids, spiders are another; there are several others, which are not so commonly known, although one contains the mites and ticks.

The different groups of arthropods are classified mostly according to the number and arrangement of their legs and other appendages. Arachnids have only four pairs of legs, insects three, and crustaceans more. Besides their walking legs, scorpions have two pairs of pincers. The larger pair looks rather like the claws of a crab or lobster and are used to seize food, usually living prey, and bring it to the smaller pincers, which have the role of jaws and teeth, and tear up the food before it is swallowed.

Arachnids, once recognized by the number of their legs, are further classified according to the nature of their bodies. While insects have three main parts to their body, arachnids have only two, the cephalothorax, which contains the mouth, eyes and various other organs, and to which are attached all the legs, and the abdomen. The soft rounded abdomen of the spiders is quite different, for instance, from that of the scorpions, which is made up of segments, terminating in a narrow tail with a last segment modified into a sting.

More characteristic of scorpions than their pincers, therefore, is their tail with its stinging apparatus. The tail of the scorpion, which is really a narrow part of the abdomen, is made up of 5 narrow segments and followed by a sixth, which is the sting. It is very mobile, and is usually curved back above the rest of the body bringing the sting near the front of it, its extremity pointing forward; the scorpion stings by driving the tail and the sting forward and upward or upward and backward. This sting is pear-shaped, with a curved needle-like extremity. In the pear-shaped part are two venom glands, and they open by two small holes slightly below the extremity of the curved needle: this arrangement functions just as does a hypodermic, in which the sharp needle point breaks the skin and protects from obstruction the opening of the needle which is just behind it.

The venom produced by the glands and injected by the sting varies with different species; not all have been studied in detail. In regions of the world which happen to be well-equipped for research, and rich in deadly scorpions, much work has been carried on to analyze the venoms, understand their toxic effect, and find remedies. In North Africa, for instance where there are various dangerous species, including one which causes some deaths every year, the Pasteur Institute in Algiers has been studying these scorpions for many years, and is manufacturing anti-scorpion serum, in just the same way that sera are prepared to help victims of snake bites. In Arizona, the Poisonous Animals Research Laboratory of the State College, at Tempe, studies the local deadly scorpions, and advises on treatment of stung persons (Stahnke, 1949).

The effect of a scorpion's sting is quite independent of the size of the species, some of the deadly scorpions being rather small; the giant scorpions of tropical Africa, Pandinus, which can be as much as 180 mm. long and the Palamnaeus or Heterometrus of the East Indies which come next in size, are relatively harmless. They must be rather formidable animals, and some Pandinus species have formidable names: P. imperator, and P. dictator. However, the scorpions that occur on atolls are rather small, and relatively harmless. Their sting is painfull, but the pain vanishes after some hours, leaving no after-effects.

Generally six families of living scorpions are recognized by zoologists, and atoll scorpions represent two of them. In the family Scorpionidae (the same to which the above-mentioned giants belong) is the species Hormurus australasiae (Fabr.); the family Buthidae is represented on atolls by Isometrus maculatus de Geer, two species of Lychas (Archisometrus of Kraepelin), and perhaps others. It must be borne in mind, of course, that on atolls, scorpions are not very abundant or conspicuous, and that, since collecting there has almost never been carried on intensively, there must be many atolls from which they have not been recorded, though present. There also may be more species present on some atolls, especially those near high islands or continents; for instance a species of Lychas is known from the Duizend Eilanden, which are very close to Java, just outside the Bay of Batavia, and not, so far as records are available, from other atolls.

Family SCORPIONIDAE.

1. Hormurus australasiae (Fabr.)
(Scorpio australasiae Fabr. Syst. Ent. 399, 1775)

This scorpion has a wide range of occurrence, and is found all over the islands of the Pacific, Malaysia and some parts of the Indian Ocean.

It is found in the woods and coconut plantations; most authors who record it do not indicate the exact habitat, but we have some information on the specimens collected in the Marshall Islands by F. R. Fosberg in 1951-52. One, on Lae Atoll, was found in the crotch of a split, partially decaying breadfruit tree. Otherwise, the specimens were observed under sticks and stones, in coconut trash, and especially under the bark of dead logs, in coconut plantations and in the various types of forest and scrub found in the Marshalls. Also in the Marshalls, on Arno, Usinger (1953, p. 27) cites scorpions as predators in the fallen log stratum of the canopy woodland community. This most probably refers to Hormurus. It certainly would be interesting to have more information on this scorpion, and its habits: Does it burrow at all, or just hide under loose material? Does it give chase to prey, or, as reported for Mediterranean scorpions, mostly wait with extended pincers, ready to grasp an unwary spider or other animal? Does it exhibit the same courtship behavior?

Chamisso (1821, p. 159) recorded this under the name Scorpio australasiae from the Marshalls "of which the natives did not appear to be afraid; and the sting of which, according to Kadu [his informant], produces a local swelling which is of short duration". Since then, all reports agree

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that the sting of this scorpion is not to be feared.

Marshall Islands:

Ailuk Atoll; Lae Atoll, Lae Islet, Lwejap Islet, Enemanman Islet; Wotho Atoll, Wotho Islet; Ujae Atoll, Bock Islet; all collected by F. R. Fosberg in 1951-52.

Ailinglaplap Atoll, Bigatyelang Islet, collected by H. K. Townes in 1946; other specimens, collector unknown, collected in 1948.

Arno Atoll, collected by J. W. Wells in 1950.

Bikini Atoll, Romuk Islet, collected by L. P. Schultz in 1946; Namu Islet, and Bikini Islet, collected by J. P. E. Morrison in 1946.

Caroline Islands:

Ulithi Atoll, Mogmog Islet; Kapingamarangi Atoll, Hare Islet; Nukuoro Atoll, Nukuoro Islet; all collected by H. K. Townes in 1946.

Tuamotu Islands:

Raroia Atoll, Ngarumaoa Islet, Oteteu Islet, Opakea Islet; all collected by J. P. E. Morrison in 1952.

The above records are hitherto unpublished, and were kindly furnished by Dr. E. A. Chapin, of the U. S. National Museum, who identified the specimens and transmitted the information in time to include these many recent records in this paper. His help and advice are here gratefully acknowledged. The species had been previously recorded from the Marshall Islands: by Karsch 1881, p. 15 (as Liocheles australasiae), collected by O. Finsch, and by Chamisso (see above).

Ellice Islands:

Funafuti, Pocock 1898 p. 323 (see discussion of Buthus brevicaudatus Rainbow, below); many specimens were collected by Sollas and Gardiner during the Funafuti survey and boring work; Kopstein, 1921 p. 136 (specimens apparently available in Dutch museums, but no record of collection).

Ellice Islands, Buxton, 1927 p. 13; collected by O'Connor, determined by Hirst.

Duizend Eilanden:

Edam Island, Kopstein 1921 p. 119, 135.

Noordwachter Island, Kopstein 1923 p. 185, 186.

Kopstein in his 1921 paper, p. 135, also records this species from "Kokos Inseln". Unfortunately, this is not quite clear, and although it may be supposed that this refers to Cocos Keeling Atoll, extending the range of

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the species to this Indian Ocean atoll, it may well also be one of the many other Cocos Islands, especially those in the Andaman Islands.

Family BUTHIDAE

2. Isometrus maculatus (de Geer)
(Scorpio maculatus de Geer, Mem. Hist. Ins. 7:346, 1778)

Unlike the above species, this scorpion is found in and around human habitations, and is transported by human agency. It is not native to the islands. It has managed to travel all around the world, and is found practically everywhere in the tropics, as shown by the following atoll records:

Marshall Islands:

Karsch, 1881 p. 15, collected by O. Finsch; Schnee, 1904 p. 406, determined by Dahl.

Jemo Island, collected by F. R. Fosberg in 1951, on the floor of the only house on this tiny island, which is uninhabited, except when visited occasionally to prepare copra. Only one individual was seen.

Phoenix Islands:

Canton Island, Van Zwaluwenburg, 1943 p. 303 "found occasionally in buildings".

Pratas Island (China Sea):

Cambridge 1871 p. 617 (as Lychas maculatus); collected by Collingwood, who says (1868 p. 27) that small scorpions were abundant in an abandoned Chinese temple on Pratas.

Cocos-Keeling:

Hirst, in Wood-Jones 1910 p. 366. Wood-Jones, p. 306 says that wounds are painful and dreaded, but not fatal. Gibson-Hill, 1950, p. 101: "Plentiful on all the larger islands. Local name, Kala Jengking. It does not appear to be seasonal. In the plantation it is found at the base of the fronds of the coconut palms, and under the piles of fallen nuts. On Pulo Selma and Pulo Tikus it occurs fairly freely in the buildings. It moves about mostly at night."

Seychelles:

Bird Island, Hirst, 1913 p. 32.

Dennis Island, Hirst, l. c.

Astove Island:

Hirst, l. c.

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Maldives:

North Mahlosmadulu Atoll, Fainu Islet, Male Atoll, Huhule Islet, Suvadiva Atoll, Havaru Tinadu Islet, Pocock, 1904, p. 798, as I. europaeus (L.), collected by J. S. Gardiner.

Minicoi, Pocock, l. c.

3. Lychas scutatus Koch Arach. 12: pp. 3, 163, 1845. [indicated as L. scutilus on p. 3, apparently typographical error].

Cocos-Keeling Atoll:

Kopstein, 1921 p. 122.

4. Lychas mucronatus (Fabr.)
(Scorpio mucronatus Fabr. Ent. Syst. suppl. 294, 1798)

Duizend Eilanden:

Edam Island, Kopstein 1921 p. 123.

5. Buthus brevicaudatus Rainbow, Austral. Mus. Mem. 3: 107, 1897.

Ellice Islands:

Funafuti Atoll; Rainbow, created this new name for Funafuti scorpions, but Pocock, 1898 p. 323, severely criticized this determination, and placed the specimens in the species Hormurus australasiae, see above. Rainbow's plate, however, does not much resemble Hormurus australasiae, so this reduction may quite possibly be incorrect.

These are available records of identified scorpion species from atolls. In addition to these, there are a number of records of "scorpions", from various other islands; some of these for instance are found in lists of native names for various atolls.

Gilbert Islands:

Abemama Atoll: Woodford, 1895 p. 347 records a small species.

Onotoa Atoll: E. T. Moul (ined.) collected some scorpions among packing cases (probably Isometrus, possibly just introduced).

Caroline Islands:

Kapingamarangi, Miller, 1950 p. 6 records a small scorpion.

Nukuoro, Eilers, 1934 p. 193 cites native name.

Ifaluk, Burrows, 1949 p. 19 says that nothing was heard or seen of scorpions.

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Marshall Islands:

Kraemer and Nevermann 1938 p. 297 give native names.

Luangia and Nukumanu Atolls:

Sarfert and Damm, 1929, p. 31, give native names.

There are undoubtedly other such records of scorpions scattered throughout the non-systematic literature on atolls, and it is hoped that more of them will become known, and that more collections and determinations will help clarify them. New records are always interesting even though of the same species as they enable us to follow the spread of the species, especially that of Isometrus maculatus, to new islands. Only a great many observations on atolls can lead to such results. As mentioned above, in addition to distribution records and specimens, data on the biology and ecology of scorpions on atolls are meager and such observations would be a valuable addition to our knowledge of atoll biota. To make such information of maximum value, it should always be accompanied by specimens.

As this summary was nearing completion, Dr. Waldo L. Schmitt kindly called attention to a very recent paper on scorpions (Vachon, 1953). It consists of brief general notes on their biology, and has no mention of atolls, but has a short list of useful references, and is illustrated with some beautiful color plates, including one of the giant African scorpion (see p. 5 of this paper), and several of one of the deadly North African species, showing various postures. A lengthy, and much-praised work by the same author, "Etudes sur les scorpions", published by the Pasteur Institute of Algiers in 1952, unfortunately could not be consulted.

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